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Washington Basin Outlook Report March 1, 2001

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How forecasts are made

Most of the annual streamflow in the western United States originates as snowfall that has accumulated in the mountains during the winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Measurements of snow water equivalent at selected manual snow courses and automated SNOTEL sites, along with precipitation, antecedent streamflow, and indices of the El Niño / Southern Oscillation are used in computerized statistical and simulation models to prepare runoff forecasts. These forecasts are coordinated between hydrologists in the Natural Resources Conservation Service and the National Weather Service. Unless otherwise specified, all forecasts are for flows that would occur naturally without any upstream influences.

Forecasts of any kind, of course, are not perfect. Streamflow forecast uncertainty arises from three primary sources: (1) uncertain knowledge of future weather conditions, (2) uncertainty in the forecasting procedure, and (3) errors in the data. The forecast, therefore, must be interpreted not as a single value but rather as a range of values with specific probabilities of occurrence. The middle of the range is expressed by the 50% exceedance probability forecast, for which there is a 50% chance that the actual flow will be above, and a 50% chance that the actual flow will be below, this value. To describe the expected range around this 50% value, four other forecasts are provided, two smaller values (90% and 70% exceedance probability) and two larger values (30%, and 10% exceedance probability). For example, there is a 90% chance that the actual flow will be more than the 90% exceedance probability forecast. The others can be interpreted similarly.

The wider the spread among these values, the more uncertain the forecast. As the season progresses, forecasts become more accurate, primarily because a greater portion of the future weather conditions become known; this is reflected by a narrowing of the range around the 50% exceedance probability forecast. Users should take this uncertainty into consideration when making operational decisions by selecting forecasts corresponding to the level of risk they are willing to assume about the amount of water to be expected. If users anticipate receiving a lesser supply of water, or if they wish to increase their chances of having an adequate supply of water for their operations, they may want to base their decisions on the 90% or 70% exceedance probability forecasts, or something in between. On the other hand, if users are concerned about receiving too much water (for example, threat of flooding), they may want to base their decisions on the 30% or 10% exceedance probability forecasts, or something in between. Regardless of the forecast value users choose for operations, they should be prepared to deal with either more or less water. (Users should remember that even if the 90% exceedance probability forecast is used, there is still a 10% chance of receiving less than this amount.) By using the exceedance probability information, users can easily determine the chances of receiving more or less water.

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Washington Water Supply Outlook

March 2001

General Outlook

Washington State is experiencing one of the worst climatology years on record. Snowpack, precipitation and reservoir storage recordings are at record low levels in most areas in the state and are close to meeting the record low year of 1977. Forecasts of spring and summer streamflows directly reflect the lack of precipitation since October 1 and short term National Weather Service forecasts do not indicate much relief. Water supply cutbacks are eminent, only time will tell just how bad it will be. At this time, conservation and wise use of water resources is the best advice we can give and we should all prepare for a tough season.

Snowpack

The March 1 statewide SNOTEL readings were below average at 60%. The Elwah River Basin snow surveys reported the lowest readings at only 29% of average. Readings taken in the Cedar River Basin reported the highest at 84% of average. Westside averages from SNOTEL and March 1 snow surveys included the North Puget Sound river basins with 55%, the Central Puget river basins with 67%, and the Lewis-Cowlitz basins with 63%. Snowpack along the east slopes of the Cascade Mountains included the Yakima area with 61% and the Wenatchee area with 62%. Snowpack in the Spokane River Basin was at 65% and the Pend Oreille River Basin, including Canadian data, had 60% of average. Basin wide averages remain well below average however no basin has dropped below the previous record.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	59	65
Newman Lake	55	72
Pend Oreille	66	60
Okanogan	62	58
Methow	57	52
Similkameen	95	69
Wenatchee	60	60
Chelan	49	54
Stemilt Creek	79	68
Yakima	57	61
Ahtanum Creek	49	48
Walla Walla	59	64
Lower Snake	54	61
Cowlitz	47	54
Lewis	45	71
White	55	59
Green	52	52
Puyallup	54	59
Cedar	66	84
Snoqualmie	49	61
Skykomish	49	60
Skagit	49	52
Baker	49	47
Nooksack	49	55
Olympic Peninsula	48	50

Precipitation

During the month of February, the National Weather Service and Natural Resources Conservation Service climate stations reported well below average precipitation for all Washington river basins. The highest percent of average in the state was at Wenatchee, Washington. Wenatchee reported 85% of average for a total of .74 inches. The average for this site is .87 inches for February. Averages for the water year varied from 62% of average in the Walla Walla river basins to 43% of average in Colville – Pend Oreille river basins. The highest individual site average for the water year was 80% of average at Mill Creek Dam near Walla Walla.

RIVER BASIN	FEBRUARY PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	55	49
Colville-Pend Oreille	45	43
Okanogan-Methow	46	47
Wenatchee-Chelan	55	49
Upper Yakima	48	48
Lower Yakima	54	50
Walla Walla	51	65
Lower Snake	47	59
Cowlitz-Lewis	44	46
White-Green-Puyallup	49	52
Central Puget Sound	48	51
North Puget Sound	39	50
Olympic Peninsula	34	57

Reservoir

Seasonal reservoir levels in Washington vary greatly due to specific watershed management practices required in preparation for irrigation season, fisheries management and power generation. Reservoir storage in the Yakima Basin was 231,000-acre feet, 41% of average for the Upper Reaches and 106,600-acre feet, 76% of average for Rimrock and Bumping Lakes. Storage at the Okanogan reservoirs was 93% of average for March 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 26,300 acre feet, 11% of average and 18% of capacity; Chelan Lake, 367,700 acre feet, 219% of average and 54% of capacity; and Ross Lake at 257% of average and 56% of capacity.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane	11	18
Colville-Pend Oreille	28	49
Okanogan-Methow	55	93
Wenatchee-Chelan	54	219
Upper Yakima	28	41
Lower Yakima	46	76
North Puget Sound	56	257

For more information contact your local Natural Resources Conservation Service office.

Streamflow

Mid season forecasts indicate much below to below normal summer flows for all streams in the state. They vary from 81% of average for Mill Creek at Walla Walla to 48% of average for Methow River near Pateros. March forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 70%; Green River, 66%; and Skagit River, 66%. Some Eastern Washington streams include the Yakima River near Parker, 57%; Wenatchee River at Peshastin, 57%; and Spokane River near Post Falls, 58%. Volumetric forecasts are developed using current, historic and average snowpack, precipitation and streamflow data collected and coordinated by organizations cooperating with NRCS.

Streamflows reported for February were well below average across the state. The Columbia River at Birchbank, had the highest flows with 66% of average. The Cle Elum River near Roslyn with 18% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Priest River, 25%; the Columbia at The Dalles, 46%; the Spokane at Spokane, 21%; the Columbia below Rock Island Dam, 49%; the Cowlitz River at Castle Rock, 42%; and the Snake River below Ice Harbor Dam, 46%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCEEDENCE)
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Spokane	58-60
Colville-Pend Oreille	50-74
Okanogan-Methow	48-55
Wenatchee-Chelan	57-68
Upper Yakima	60-67
Lower Yakima	54-69
Walla Walla	79-81
Lower Snake	65-79
Cowlitz-Lewis	59-69
White-Green-Puyallup	68-72
North Puget Sound	67-69
Olympic Peninsula	69

STREAM	PERCENT OF AVERAGE FEBRUARY STREAMFLOWS
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Pend Oreille Below Box Canyon	44
Kettle at Laurier	55
Columbia at Birchbank	66
Spokane at Long Lake	28
Similkameen at Nighthawk	46
Okanogan at Tonasket	45
Methow at Pateros	65
Chelan at Chelan	33
Wenatchee at Pashastin	29
Yakima at Cle Elum	23
Yakima at Parker	22
Naches at Naches	24
Grande Ronde at Troy	29
Snake below Lower Granite Dam	44
SF Walla Walla near Milton Freewater	57
Lewis at Ariel	42
Cowlitz below Mayfield Dam	42
Skagit at Concrete	46

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

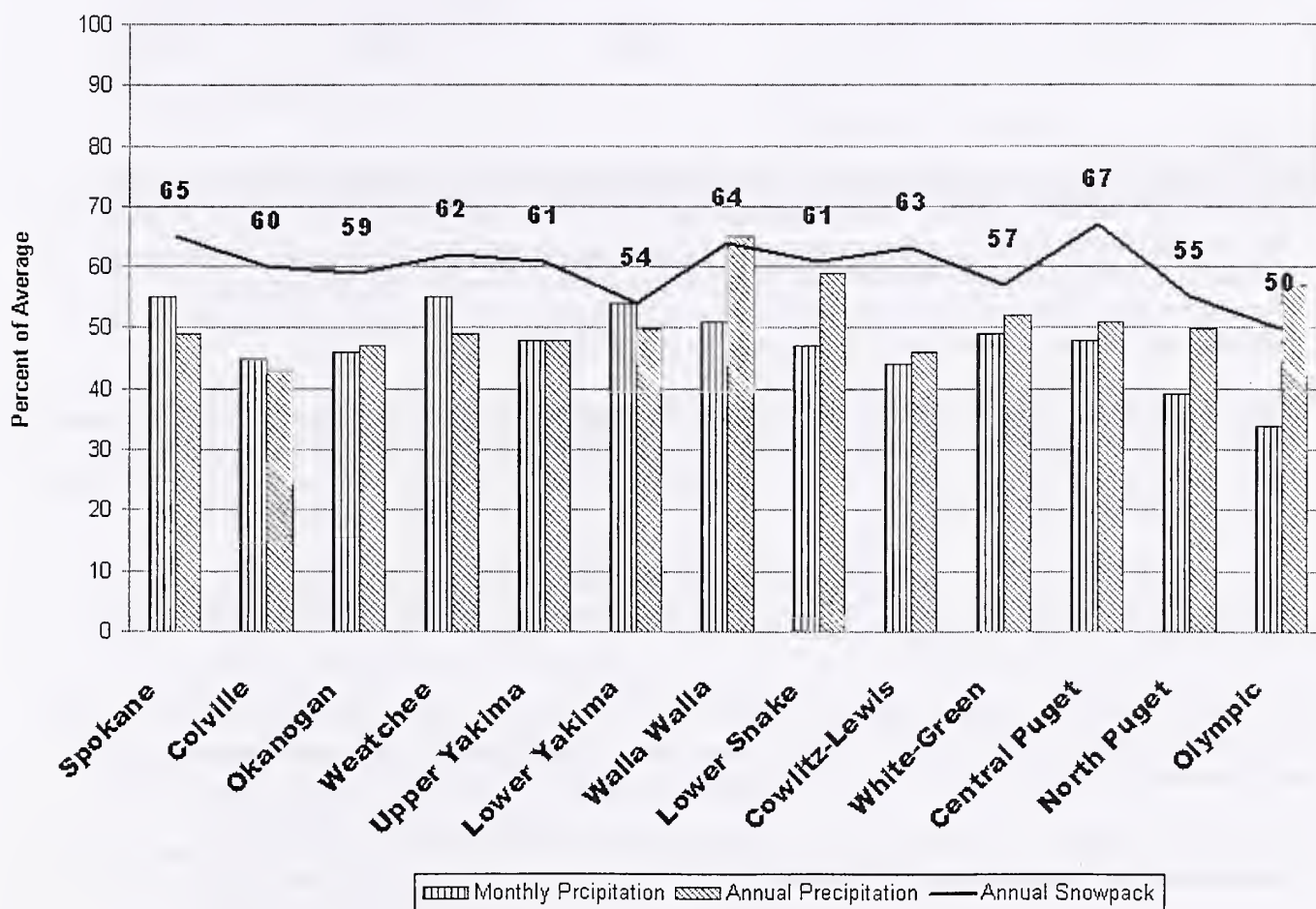
MARCH 2001

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90	SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
ABERDEEN LAKE CAN.	4000	2/26/01	19	4.0	5.0	5.7	HERRIG JUNCTION	4850	2/27/01	43	11.9	21.4	21.7
AHTANUM R.S.	3100	3/01/01	---	3.5E	7.1	6.8	HIGH RIDGE PILLOW	4980	3/01/01	---	14.4	23.4	21.6
ALPINE MEADOWS	3500	2/21/01	60	20.0	55.9	33.8	HOLBROOK	4530	2/26/01	30	5.5	10.2	8.8
ALPINE MEADOWS PILL	3500	3/01/01	---	24.7	53.6	37.1	HOODOO BASIN PILLOW	6050	3/01/01	---	17.5	35.1	39.7
AMBROSE	6480	2/28/01	29	6.3	9.0	11.0	HUMBOLDT GLCH PILLOW	4250	3/01/01	---	8.8	13.1	12.8
ASHLEY DIVIDE	4820	2/27/01	23	5.3	5.2	6.4	HURRICANE	4500	2/24/01	21	5.1	15.8	17.4
BADGER PASS	6900	2/27/01	57	15.4	---	33.2	INTERGAARD	6450	2/24/01	23	4.6	4.8	6.8
BADGER PASS PILLOW	6900	3/01/01	---	14.3	24.2	30.8	ISINTOX LAKE CAN.	5100	2/27/01	21	5.2	4.6	6.3
BARRE MIDWAY	4600	2/27/01	56	17.1	25.5	30.5	JASPER PASS AM	5400	2/21/01	---	28.8	---	75.0
BARRE TRAIL	3800	2/27/01	33	9.0	9.6	8.6	JUNE LAKE PILLOW	3200	3/01/01	---	24.4	52.1	33.6
BARKER LAKES PILLOW	8250	3/01/01	---	8.3	7.4	12.2	KELLER RIDGE	3700	2/27/01	21	4.8	5.8	4.4
BARNES CREEK CAN.	5320	2/25/01	38	10.5	18.0	16.9	KELLOGG PEAK	5560	3/01/01	47	15.6	29.0	26.3
BASIN CREEK PILLOW	7180	3/01/01	---	5.3	5.3	6.5	KISHENEHN	3890	2/27/01	22	4.8	6.9	7.5
BASSOO PEAK	5150	3/01/01	31	7.4	8.4	10.0	KIT CARSON PASTURE	4950	2/23/01	23	5.5	6.9	7.8
BEAVER CREEK TRAIL	2200	3/01/01	26	8.6	17.8	12.6	KLESILKWA CAN.	3450	2/27/01	18	4.6	11.3	11.1
BEAVER PASS	3680	3/01/01	37	12.1	25.8	25.1	KRAFT CREEK PILLOW	4750	3/01/01	---	10.2	13.9	14.5
BERNE-MILL CREEK (d)	3170	2/28/01	55	17.1	24.7	24.7	LIGHTNING LAKE CAN.	3700	2/27/01	24	5.9	9.7	10.2
BIG CREEK	6750	2/26/01	75	23.1	---	37.4	LOGAN CREEK	4300	2/26/01	27	5.2	6.0	6.7
BIG WHITE MTN CAN.	5510	3/04/01	36	9.2	15.9	16.6	LOLO PASS PILLOW	5240	3/01/01	48	12.8	28.4	28.0
BLACK MOUNTAIN	7750	2/26/01	41	10.8	12.8	12.2	LONE PINE PILLOW	3800	3/01/01	---	21.2	46.9	28.1
BLACK PINE PILLOW	7100	3/01/01	---	6.2	8.9	10.5	LOOKOUT PILLOW	5140	3/01/01	---	16.8	28.7	28.0
BLEWETT PASS#2PILLOW	4270	3/01/01	33	8.7	13.6	17.0	LOST HORSE	5940	2/21/01	50	13.6	---	28.0
BLUE LAKE	5900	2/27/01	47	11.5	17.7	22.0	LOST HORSE MTN CAN.	6300	2/28/01	25	6.9	6.7	7.6
BRENDA MINE CAN.	4450	3/01/01	---	7.2	10.4	11.5	LOST HORSE PILLOW	5000	3/01/01	35	9.6	18.7	25.6
BROOKMERE CAN.	3000	2/28/01	22	5.3	5.1	7.9	LOST LAKE PILLOW	6110	3/01/01	---	22.5	48.6	52.7
BROWN TOP AM	6000	2/27/01	71	23.4	50.6	51.9	LOWER SANDS CREEK #2	3120	2/27/01	38	12.9	21.8	16.9
BRUSH CREEK TIMBER	5000	2/26/01	27	5.6	6.3	8.6	LUBRECHT FOREST NO 3	5450	2/28/01	25	5.8	6.1	6.3
BULL MOUNTAIN	6600	2/28/01	20	4.1	5.8	5.2	LUBRECHT FOREST NO 4	4650	2/28/01	15	3.5	2.8	3.1
BUMPING LAKE	3450	2/26/01	34	10.4	---	14.0	LUBRECHT FOREST NO 6	4040	2/28/01	19	3.8	3.2	3.7
BUMPING LAKE (NEW)	3400	3/01/01	---	12.8E	14.0	17.6	LUBRECHT HYDROPLT	4200	2/28/01	23	5.1	5.5	6.4
BUMPING RIDGE PILLOW	4600	3/01/01	---	14.1	26.1	18.4	LUBRECHT PILLOW	4680	3/01/01	---	5.0	5.8	5.8
BUNCHGRASS MDWPILLOW	5000	3/01/01	---	12.5	25.0	22.7	LYMAN LAKE PILLOW	5900	3/01/01	---	26.2	52.4	48.4
CARMI CAN.	4100	3/04/01	16	3.5	4.8	5.8	LYNN LAKE	4000	3/01/01	---	8.6E	23.3	16.0
CAYUSE PASS	5300	3/01/01	103	38.0	69.8	65.3	MARIAS PASS	5250	2/28/01	38	9.6	13.7	14.9
CHESSMAN RESERVOIR	6200	2/23/01	15	2.9	1.4	3.4	MARTEN LAKE AM	3600	2/21/01	---	31.3	---	63.6
CHEWALAH	4930	2/27/01	27	8.0	18.3	13.5	MCCULLOCH CAN.	4200	2/28/01	20	4.2	5.7	6.1
CHICKEN CREEK	4060	2/27/01	38	10.0	15.6	14.3	MEADOWS CABIN	1900	3/01/01	11	2.9	5.1	6.2
CHINIAUKUM G.S.	2500	2/28/01	24	7.2	9.4	10.7	MEADOWS PASS PILLOW	3240	3/01/01	---	16.0	25.6	18.1
CITY CABIN	2390	3/01/01	---	9.0E	---	12.3	MERRITT	2140	2/28/01	29	9.7	11.6	14.4
CLOUDY PASS AM	6500	3/01/01	---	19.0E	52.1	32.9	MICA CREEK PILLOW	4750	3/01/01	---	18.0	27.3	---
COMBINATION PILLOW	5600	3/01/01	---	3.5	4.1	5.1	MINERAL CREEK	4000	2/26/01	45	10.1	17.2	15.9
COPPER BOTTOM PILLOW	5200	3/01/01	---	7.0	10.7	10.0	MISSEZULA MTN CAN.	5080	2/26/01	23	5.4	5.8	8.8
COPPER CREEK	5700	2/27/01	32	7.4	11.0	13.4	MONASHEE PASS CAN.	4500	2/25/01	26	6.7	11.8	12.0
COPPER MOUNTAIN	7700	2/25/01	35	7.7	9.5	9.1	MOOSE CREEK PILLOW	6200	3/01/01	---	8.4	15.8	14.5
CORNER CREEK	3150	2/28/01	24	6.6	7.8	6.9	MORRISSEY RIDGE CAN.	6100	3/01/01	---	9.1	---	25.4
CORRAL PASS PILLOW	6000	3/01/01	---	15.5	32.2	27.6	MORSE LAKE PILLOW	5400	3/01/01	---	23.5	36.8	38.5
COTTONWOOD CREEK	6400	2/26/01	28	6.7	6.9	6.5	MOSES MOUNTAIN (1)	4800	2/28/01	35	7.5	---	14.4
COUGAR MTN. PILLOW	3200	3/01/01	---	10.2	13.7	18.6	MOSES MTN PILLOW	4800	3/01/01	---	6.3	15.8	11.7
COX VALLEY	4500	2/25/01	53	16.1	34.7	32.4	MOSES PEAK (2)	6650	2/28/01	26	5.8	---	10.3
COYOTE HILL	4200	2/28/01	27	7.0	8.2	9.5	MOSQUITO RDG PILLOW	5200	3/01/01	---	15.5	33.2	32.2
DALY CREEK PILLOW	5780	3/01/01	---	6.2	9.2	10.0	MOULTON RESERVOIR	6850	2/22/01	28	6.4	7.6	5.8
DEER PARK	5200	2/26/01	27	8.4	16.8	17.3	MOUNT CRAG PILLOW	4050	3/01/01	---	17.6	31.6	26.5
DESERT MOUNTAIN	5600	2/27/01	35	7.6	12.1	13.2	MT. KOBAU CAN.	5500	2/25/01	28	7.7	8.0	10.4
DEVILS PARK	5900	2/28/01	59	21.2	35.8	36.9	MOUNT TOLMAN	2000	2/26/01	11	2.4	2.4	3.5
DISCOVERY BASIN	7050	2/22/01	31	7.4	6.3	8.6	MOUNT GARDNER	3300	2/21/01	32	11.6	14.0	14.2
DIX HILL	6400	2/25/01	32	9.0	10.8	10.7	MOUNT GARDNER PILLOW	2860	3/01/01	---	10.9	15.8	14.2
DOMMERIE FLATS	2200	2/26/01	21	7.4	9.1	7.7	MUTTON CREEK #1	5700	2/23/01	25	5.5	10.0	11.4
EAST FORK R.S.	5400	3/02/01	18	3.7	6.0	6.0	N.F. ELK CR PILLOW	6250	3/01/01	---	7.7	11.2	10.8
EAST RAGGED SADDLE	3740	3/04/01	51	15.7	23.2	17.7	NEW HOZOMEN LAKE	2800	2/28/01	21	5.2	8.0	10.9
EASY PASS AM	5200	2/21/01	---	31.2	62.0	64.5	NEZ PERCE CMP PILLOW	5650	3/01/01	---	7.8	13.2	13.0
EL DORADO MINE	7800	2/25/01	48	9.9	12.8	16.7	NEZ PERCE PASS	6570	2/23/01	33	9.7	16.8	16.3
ELBOW LAKE PILLOW	3200	3/01/01	---	19.0	42.6	29.8	NOISY BASIN PILLOW	6040	3/01/01	---	18.0	31.3	33.7
EMERY CREEK PILLOW	4350	3/01/01	---	8.1	13.1	14.0	NORTH FORK JOCKO	6330	2/26/01	81	24.1	37.9	38.2
ENDERBY CAN.	5800	2/28/01	60	17.3	35.5	32.7	OLALLIE MDWS PILLOW	3960	3/01/01	---	25.9	43.5	44.6
ESPERON CK. UP CAN.	5050	2/24/01	31	7.2	11.2	14.3	OLALLIE MEADOWS	3630	3/01/01	---	22.5E	38.0	38.7
FARRON CAN.	4000	2/27/01	24	6.3	11.1	11.9	OPHIR PARK	7150	2/25/01	35	9.3	12.0	14.7
FATTY CREEK	5500	2/26/01	53	13.3	19.2	20.2	OYAMA LAKE CAN.	4100	2/27/01	21	4.4	5.8	5.9
FISH CREEK	8000	2/26/01	27	6.2	7.5	7.8	PARADISE PARK PILLOW	5500	3/01/01	---	32.7	67.3	47.9
FISH LAKE	3370	2/26/01	53	18.7	34.8	29.3	PARK CK RIDGE PILLOW	4600	3/01/01	60	22.9	40.3	40.6
FISH LAKE PILLOW	3370	3/01/01	49	15.7	32.2	28.4	PETERSON MDW PILLOW	7200	3/01/01	---	6.6	6.1	8.5
FLATTOP MTN PILLOW	6300	3/01/01	---	18.8	33.9	40.9	PIGTAIL PEAK PILLOW	5900	3/01/01	---	21.0	35.1	41.0
FLEECER RIDGE	7500	2/28/01	26	5.6	9.5	9.0	PIKE CREEK PILLOW	5930	3/01/01	---	10.2	19.3	22.8
FOURTH OF JULY SUM	3200	3/02/01	34	9.6	10.4	8.4	PIPESTONE PASS	7200	2/26/01	17	3.2	5.2	4.1
FREEZEOUT CK. TRAIL	3500	2/28/01	22	5.4	10.7	11.1	POPE RIDGE PILLOW	3540	3/01/01	38	10.2	16.3	16.7
FROHNER MDWS PILLOW	6480	3/01/01	---	5.1	5.3	7.2	POSTILL LAKE CAN.	4200	2/26/01	23	5.8	7.1	7.0
GOAT CREEK	3600	2/26/01	18	4.4	5.4	6.4	POTATO HILL PILLOW	4500	3/01/01	---	14.5	23.7	21.9
GRASS MOUNTAIN #2	2900	3/01/01	---	1.5E	9.2	13.9	QUARTZ PEAK PILLOW	4700	3/01/01	---	10.9	23.8	18.6
GRAVE CRK PILLOW	4300	3/01/01	---	8.0	12.8	15.2	RAGGED MOUNTAIN	4200	3/04/01	49	15.5	26.1	16.4
GRAYSTOKE LAKE CAN.	5500	2/27/01	25	5.0	---	13.3	RAGGED RIDGE	3330	2/28/01	25	7.9	10.6	7.4
GREEN LAKE	6000	3/01/01	---	18.1E	12.7	29.1	RAINY PASS PILLOW	4780	3/01/01	---	18.0	31.2	32.7
GREEN LAKE PILLOW	6000	3/01/01	39	10.9	23.3	17.5	REX RIVER PILLOW	1900	3/01/01	43	15.6	29.6	20.1
GREYBACK RES CAN.	4700	2/26/01	25	4.8	5.1	7.7	ROCKER PEAK PILLOW	8000	3/01/01	---	9.6	8.7	12.6
GRIFFIN CR DIVIDE	5150	3/01/01	29	6.8	8.0	10.0	ROCKY CREEK AM	2100	3/01/01	---	12.5E	28.0	25.2
GROUSE CAMP PILLOW	5380	3/01/01	---	9.9	18.1	17.1	RUSTY CREEK	4000	2/23/01	16	3.1	5.5	6.2
HAMILTON HILL CAN.	4550	2/28/01	30	8.3	9.7	13.2	SADDLE MTN PILLOW	7900	3/01/01	---	12.3	18.4	21.9
HAND CREEK PILLOW	5030	3/01/01	---	7.1	10.3	10.9	SAGE CREEK SADDLE	4080	2/28/01	36	10.7	19.2	15.9
HARTS PASS PILLOW	6500	3/01/01	55	17.5	31.3	34.6	SALMON MDWS PILLOW	4500	3/01/01	20	4.4	7.3	8.3
HELL ROARING DIVIDE	5770	2/27/01	47	13.1	23.9	26.4	SASSE RIDGE PILLOW	4200	3/01/01	---	15.4	31.9	27.4

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
SAVAGE PASS PILLOW	6170	3/01/01	49	12.5	21.5	22.9
SAWMILL RIDGE	4700	3/01/01	---	17.5E	28.0	29.7
SCHREIBERS MDW AM	3400	2/21/01	---	26.2	---	47.9
SHEEP CANYON PILLOW	4050	3/01/01	---	7.0	43.7	30.1
SILVER STAR MTN CAN.	5600	2/23/01	45	13.7	27.0	23.9
SKALKAHO PILLOW	7260	3/01/01	---	11.2	18.3	20.8
SKITWISH RIDGE	5110	2/27/01	58	18.5	31.2	27.5
SKOOKUM CREEK PILLOW	3920	3/01/01	163	16.3	35.4	24.9
SLIDE ROCK MOUNTAIN	7100	2/22/01	31	7.3	9.4	13.3
SPENCER MDW PILLOW	3400	3/01/01	---	18.6	43.7	27.2
SPIRIT LAKE PILLOW	3100	3/01/01	---	2.8	11.4	6.6
SPOTTED BEAR MTN.	7000	2/27/01	40	9.7	12.4	13.3
STAHL PEAK PILLOW	6030	3/01/01	---	12.7	25.0	30.2
STAMPEDE PASS PILLOW	3860	3/01/01	---	22.3	41.4	38.2
STEMILT SLIDE	5000	3/01/01	---	8.3E	12.1	12.7
STEMPLE PASS	6600	2/27/01	24	5.0	8.6	8.5
STEVENS PASS PILLOW	4070	3/01/01	---	19.1	28.6	34.7
STEVENS PASS SAND SD	3700	2/28/01	56	18.4	30.7	31.1
STORM LAKE	7780	2/22/01	36	8.4	7.0	10.8
STRYKER BASIN	6180	2/27/01	48	13.2	26.2	28.5
SUMMERLAND RES CAN.	4200	2/26/01	21	4.6	6.3	8.4
SUMMIT G.S.	4600	2/26/01	26	6.3	7.9	7.1
SUNSET PILLOW	5540	3/01/01	---	13.3	21.8	25.7
SURPRISE LKS PILLOW	4250	3/01/01	---	25.5	56.0	37.5
TEN MILE LOWER	6600	2/23/01	25	4.9	4.0	6.3

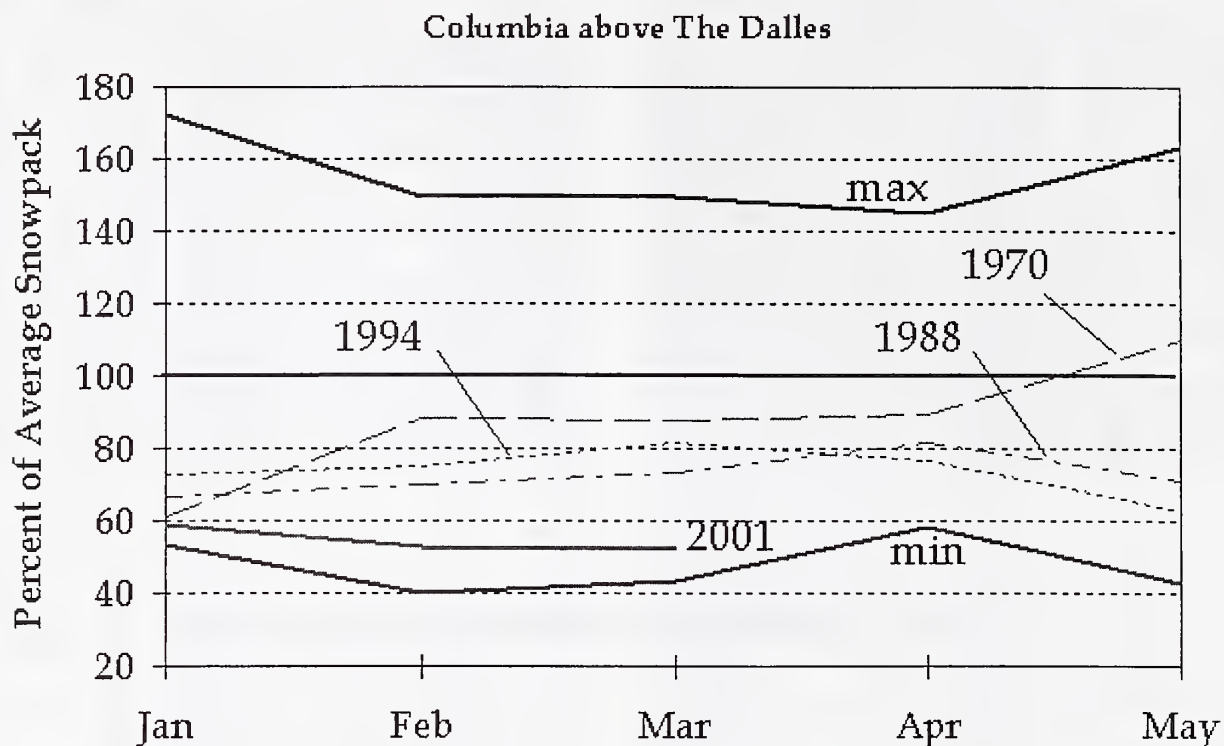
SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
TEN MILE MIDDLE	6800	2/23/01	31	6.9	5.5	9.5
THUNDER BASIN	4200	3/01/01	---	8.9E	20.2	18.5
TINKHAM CREEK PILLOW	3000	3/01/01	---	18.0	24.8	17.2
TOUCHET #2 PILLOW	5530	3/01/01	---	17.2	30.4	27.8
TRAPPING CK UP CAN.	4100	3/01/01	---	2.8E	---	7.9
TRINKUS LAKE	6100	2/27/01	79	23.4	35.2	36.7
TROUGH #2 PILLOW	5310	3/01/01	---	6.0	10.1	9.0
TROUT CREEK CAN.	5650	2/25/01	21	5.3	6.3	6.5
TRUMAN CREEK	4060	2/27/01	23	5.1	3.6	5.0
TUNNEL AVENUE	2450	2/27/01	45	15.9	19.2	19.2
TV MOUNTAIN	6800	2/26/01	41	9.6	14.4	15.6
TWELVEMILE PILLOW	5600	3/01/01	---	9.6	17.2	16.4
TWIN CREEKS	3580	2/27/01	34	7.9	11.2	10.7
TWIN LAKES	2700	2/26/01	20	4.2	6.7	8.7
TWIN LAKES PILLOW	6400	3/01/01	---	18.8	36.0	34.3
TWIN SPIRIT DIVIDE	3480	3/04/01	35	10.2	13.7	13.8
UPPER HOLLAND LAKE	6200	2/27/01	64	20.3	31.9	30.4
UPPER WHEELER PILLOW	4400	3/01/01	---	8.5	9.3	12.1
VASEUX CREEK CAN.	4250	2/26/01	14	2.4	3.3	5.5
WARM SPRINGS PILLOW	7800	3/01/01	---	12.3	15.5	18.2
WEASEL DIVIDE	5450	2/28/01	43	11.4	26.2	29.5
WELLS CREEK PILLOW	4200	3/01/01	---	15.5	27.8	33.2
WHITE PASS ES PILLOW	4500	3/01/01	---	10.5	20.9	20.7
WHITE ROCKS MTN CAN.	7200	2/28/01	38	10.4	16.8	19.3

March 1 - Snowpack and Precipitation Conditions at a Glance



Columbia Basin Snowpack Summary

For the Water Year: 2001



March, 2001

The Columbia Basin snowpack percent of average was 52.3 for February 1st and on March 1st 52.6 percent. The snowfall during February was only enough to maintain the already low situation. In the upper basin, Canada and the Kootenay remained within 1% of last month (now 54 and 46 percent, respectively). These two sub-basins account for 43% of the average flow at The Dalles. The Kootenay at 46% edges out the Salmon Basin in central Idaho (47%) for holding the lowest snowpack.

Two sub-basins also vie for the best snowpack in the Columbia (a mere 62%) held by the Snake headwaters and the Eastern Oregon Wallawa Mountains. Oregon's John Day and Deschutes basins dropped from the upper 60 percent range to an even 60% each. In Washington, the North Cascades went up 1% to 55% while the Yakima dropped 2% to 58%.

Overall, the snowpack above The Dalles is 45% of a normal year's peak accumulation, with only 1977, at 37%, being a lower year on record. The most similar year of more recent times was 1988, which held a March snowpack at 63% of peak.

The upper basin is still setting records for low snowpack. The Columbia above Castlegar is at 51%, dropping below 1977's previous record of 54%. The Columbia above Grand Coulee set new records for January 1st and February 1st, but for March 1st, comes up slightly to tie the 1977 value at 52%.

Last year was as close to average as the record has seen and 2001 follows with a definitive low year. One thing seems sure: variation is nature's specialty.



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Helpful Internet Addresses

NRCS Snow Survey and Climate Services Homepages

Washington:

<http://www.wa.nrcs.usda.gov/snow/snow.htm>

Oregon:

<http://crystal.or.nrcs.usda.gov/snowsveys>

Idaho:

<http://idsnow.id.nrcs.usda.gov>

National Water and Climate Center (NWCC):

<http://www.wcc.nrcs.usda.gov>

NWCC Anonymous FTP Server:

<ftp.wcc.nrcs.usda.gov>

USDA-NRCS Agency Homepages

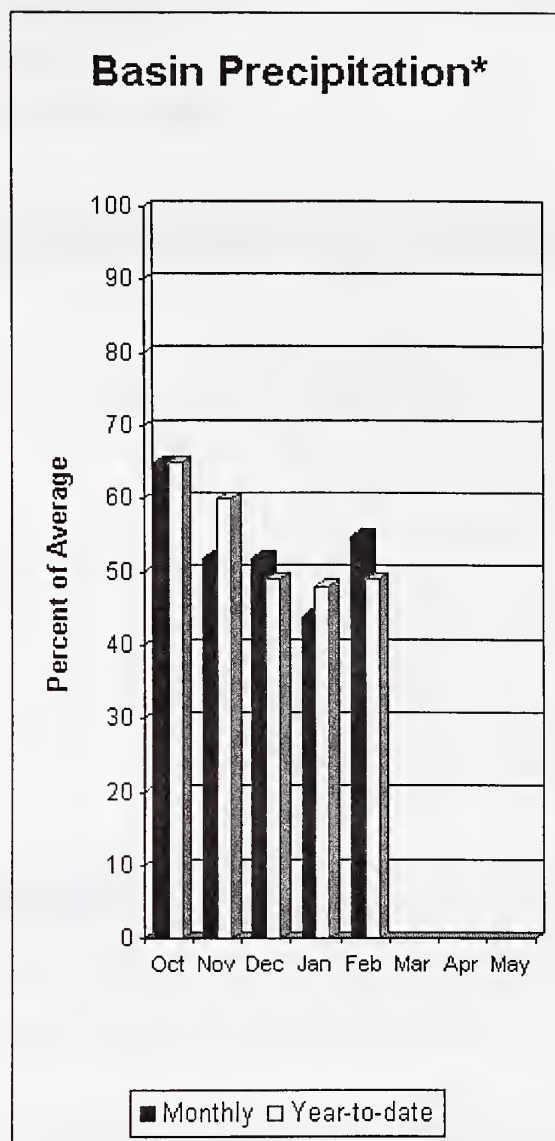
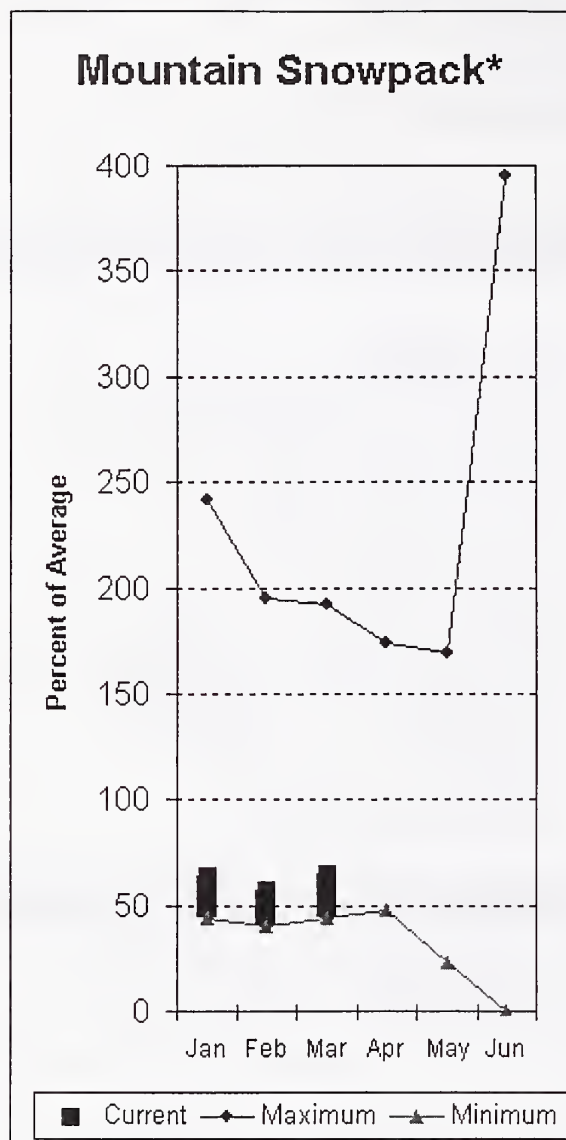
Washington:

<http://www.wa.nrcs.usda.gov/nrcs>

NRCS National:

<http://www.ftw.nrcs.usda.gov>

Spokane River Basin



*Based on selected stations

The March 1 forecasts for summer runoff within the Spokane River Basin are 58% of average near Post Falls and 60% at Long Lake. The forecast is based on a basin snowpack that is 65% of average and precipitation that is 49% of average for the water year. Precipitation for February was much below normal at 55% of average. Streamflow on the Spokane River at Long Lake, was 28% of average for February. March 1 storage in Coeur d'Alene Lake, was 26,300-acre feet, 18% of average and 11% of capacity. Snowpack at Quartz Peak SNOTEL site contained 10.9 inches of water, compared to the average March 1 reading of 18.6 inches. Average temperatures in the Spokane basin were 7 degrees below normal for February and 3 degrees below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Spokane River Basin

Streamflow Forecasts - March 1, 2001

SPOKANE near Post Falls (2)	APR-SEP	1000	1345	1580	58	1815	2160	2720
	APR-JUL	1014	1348	1575	60	1802	2136	2627
SPOKANE at Long Lake (2)	APR-JUL	1095	1482	1745	60	2008	2395	2905
	APR-SEP	1188	1597	1875	60	2153	2562	3128

SPOKANE RIVER BASIN Reservoir Storage (1000 AF) - End of February					SPOKANE RIVER BASIN Watershed Snowpack Analysis - March 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage This Year	*** Usable Storage Last Year	*** Avg	Watershed	Number of Data Sites	This Year as % of Last Yr	% of Average
COEUR D'ALENE	238.5	26.3	124.5	149.1	SPOKANE RIVER	17	59	65
					NEWMAN LAKE	2	55	72

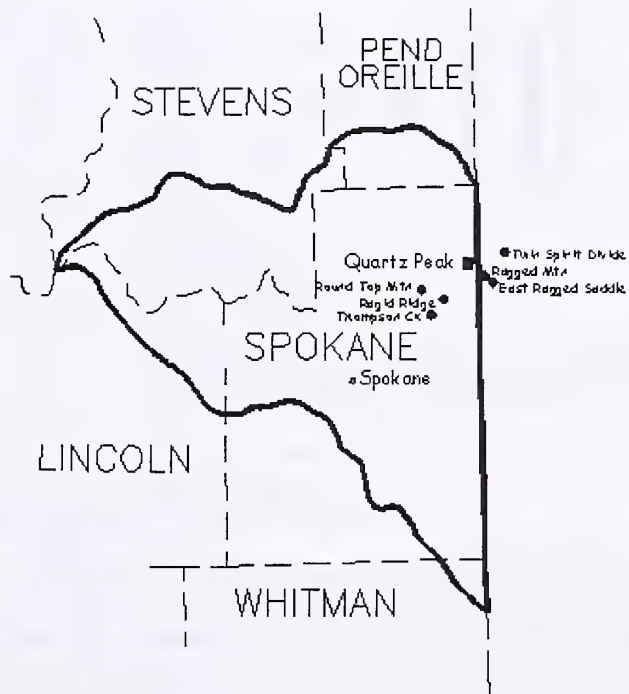
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The average is computed for the 1961-1990 base period.

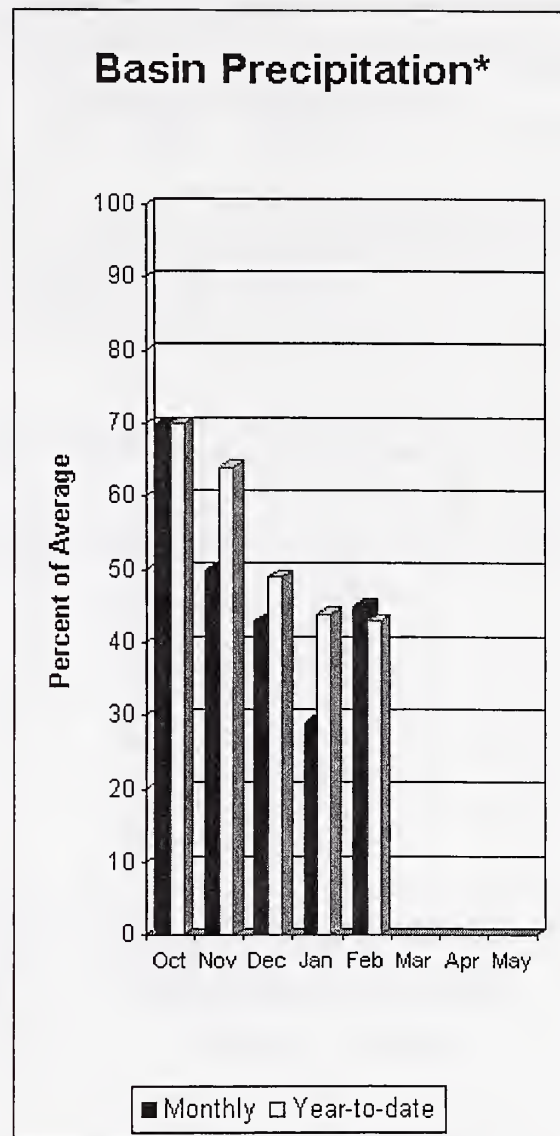
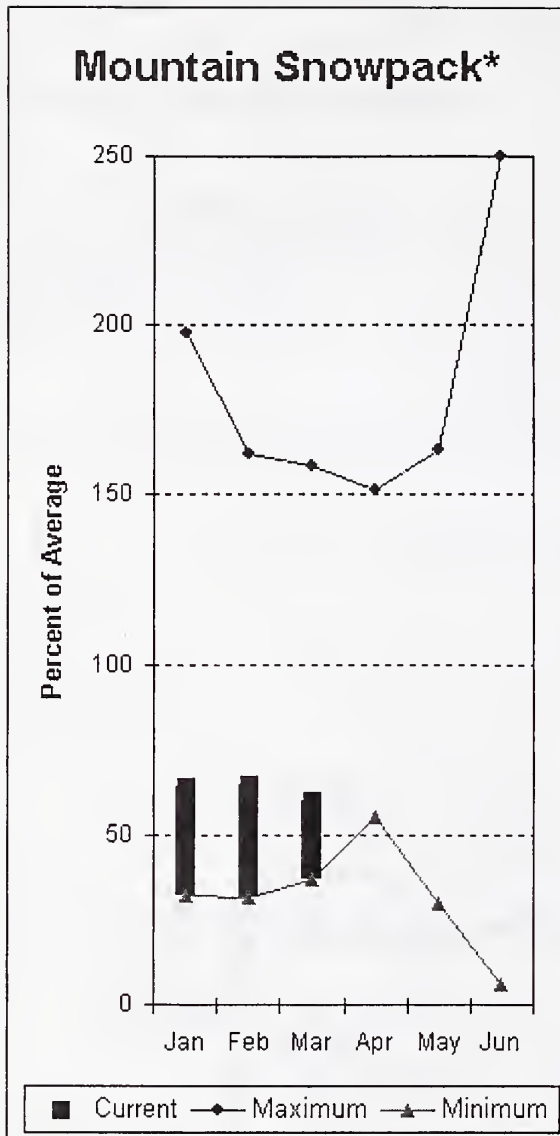
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Spokane River Basin
Percent of Average
March 1, 2001

Snowpack - 65%
Precipitation - 49%
Reservoir - 18%



Colville - Pend Oreille River Basins



*Based on selected stations

The April – September average forecast for the Kettle River streamflow is 62%, Colville at Kettle Falls is 50%, and Priest River near the town of Priest River is 50%. February streamflow was 44% of average on the Pend Oreille River, 66% on the Columbia at the International Boundary and 55% on the Kettle River. March 1 snow cover was 60% of average in the Pend Oreille Basin, 56% in the Kettle River Basin and 59% in the Colville River Basin. Bunchgrass Meadows SNOTEL site had only 12.5 inches of snow water. Normally Bunchgrass would have 22.7 inches on March 1. Precipitation during February was 45% of average, bringing the year-to-date precipitation to 43% of average. Reservoir storage in Roosevelt and Banks lakes was reported to be 49% of average and 28% of capacity on March 1. Average temperatures were 8 degrees below normal for February and 3 below for the water year.

For more information contact your local Natural Resources Conservation Service office.

Colville - Pend Oreille River Basins

Streamflow Forecasts - March 1, 2001

Forecast Point	Forecast Period	<===== Drier ===== Future Conditions ===== Wetter =====>						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	Chance Of Exceeding * 50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
PEND OREILLE Lake Inflow (2)	APR-JUL	4246	5660	6620	50	7580	8994	13150
	APR-SEP	3935	5903	7240	50	8577	10545	14370
PRIEST near Priest River (1,2)	APR-JUL	276	372	415	51	458	554	812
	APR-SEP	276	382	430	50	478	584	865
PEND OREILLE bl Box Canyon (2)	APR-JUL	4593	5841	6690	50	7539	8787	13380
	APR-SEP	4091	6002	7300	50	8599	10510	14590
CHAMOKANE CREEK near Long Lake	MAY-AUG	2.40	4.72	6.30	74	7.88	10.20	8.52
COLVILLE at Kettle Falls	APR-SEP	28	51	66	50	81	104	131
	APR-JUL	25	46	60	50	74	95	120
KETTLE near Laurier	APR-SEP	829	1014	1140	62	1266	1451	1854
	APR-JUL	812	979	1092	62	1205	1372	1761
COLUMBIA at Birchbank (1,2)	APR-JUL	18070	21529	23100	66	24671	28130	35140
	APR-SEP	22450	26817	28800	66	30783	35150	43810
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	28425	35560	38800	60	42040	49175	64850
	APR-JUL	24100	30014	32700	60	35386	41300	54543

COLVILLE - PEND OREILLE RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
ROOSEVELT	5232.0	951.5	3132.0	2763.0
BANKS	715.0	696.5	676.4	606.0

COLVILLE - PEND OREILLE RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
COLVILLE RIVER	1	44	59
PEND OREILLE RIVER	60	64	58
KETTLE RIVER	9	63	56

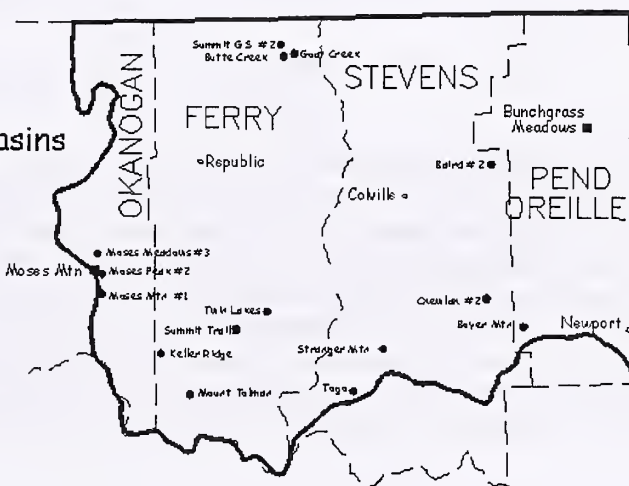
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The average is computed for the 1961-1990 base period.

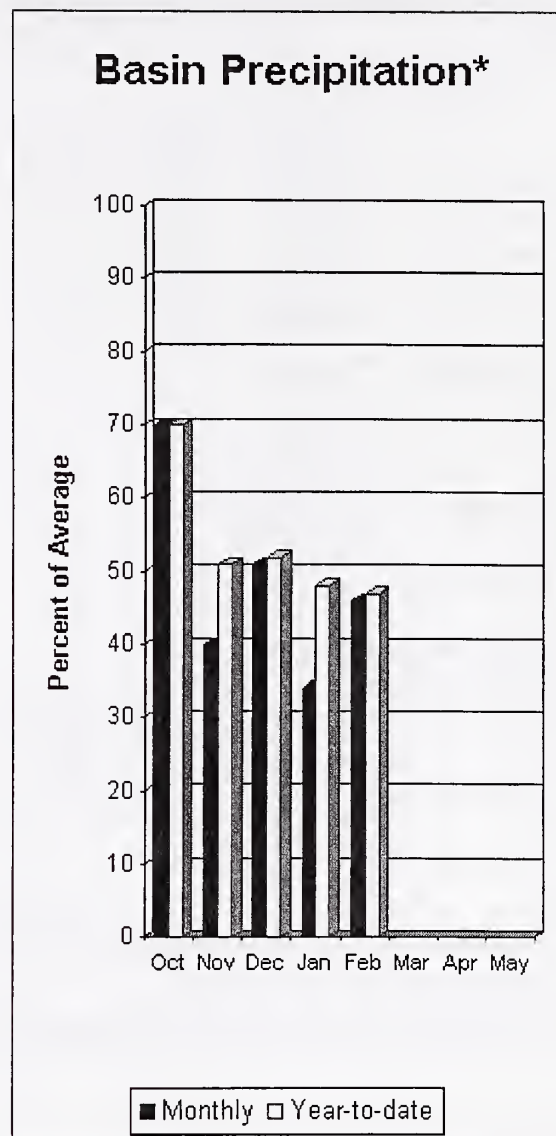
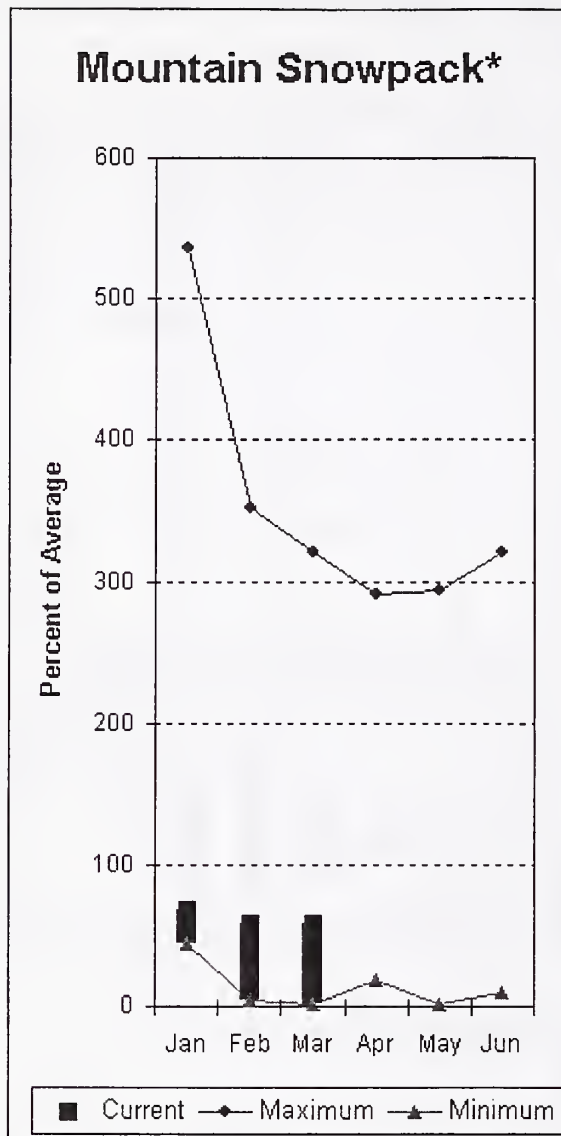
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Colville-Pend Oreille River Basins
Percent of Average
March 1, 2001

Snowpack - 58%
Precipitation - 43%
Reservoir - 34%



Okanogan - Methow River Basins



*Based on selected stations

Summer runoff average forecast for the Okanogan River is 55%, Similkameen River is 54%, Methow River is 49% and Salmon Creek is 54%. March 1 snow cover on the Okanogan was 58% of average and Methow was 52%. Moses Mountain SNOTEL site had a March 1 reading of 54% of average. February precipitation in the Okanogan-Methow was 46% of average, with precipitation for the water year at 47% of average. February streamflow for the Methow River was 65% of average, 45% for the Okanogan River and 46% for the Similkameen. Snow-water-content at the Salmon Meadows SNOTEL, near Conconully, was 4.4 inches. Average for this site is 8.3 inches on March 1. Combined storage in the Conconully Reservoirs was 13,000-acre feet, which is 55% of capacity and 93% of the March 1 average. Temperatures were 3 degrees below normal for the past month and near normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Okanogan - Methow River Basins

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
SIMILKAMEEN near Nighthawk (1)	APR-JUL	376	613	720	55	827	1064	1304
	APR-SEP	407	657	770	55	883	1133	1399
OKANOGAN near Tonasket (1)	APR-JUL	142	598	805	55	1012	1468	1466
	APR-SEP	162	663	890	55	1117	1618	1623
SALMON CREEK near Conconully	APR-JUL	0.2	5.1	10.3	54	15.5	23	19.1
	APR-SEP	0.2	5.4	10.8	54	16.2	24	20
METHOW RIVER near Pateros	APR-SEP	317	399	455	48	511	593	942
	APR-JUL	309	385	436	50	487	563	873

OKANOGAN - METHOW RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
SALMON LAKE	10.5	6.9	7.4	8.0
CONCONULLY RESERVOIR	13.0	6.1	11.3	6.0

OKANOGAN - METHOW RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
OKANOGAN RIVER	22	62	58
OMAK CREEK	3	40	54
SANPOIL RIVER	3	77	69
SIMILKAMEEN RIVER	4	95	69
TOATS COULEE CREEK	1	100	60
CONCONULLY LAKE	3	57	50
METHOW RIVER	5	57	52

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

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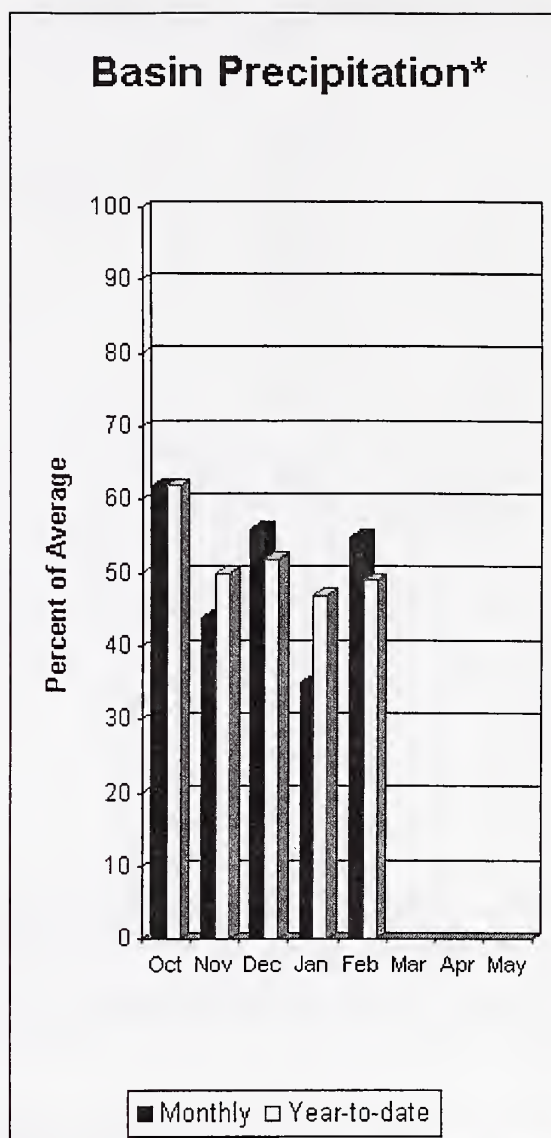
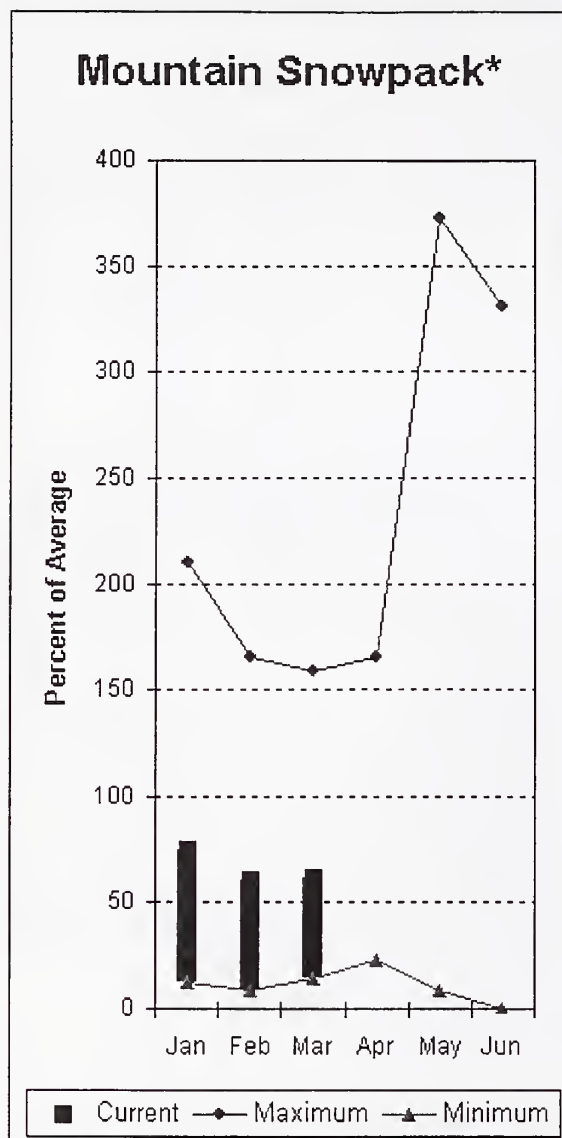
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Okanogan-Methow River Basins
Percent of Average
March 1, 2001

Snowpack - 59%
Precipitation - 47%
Reservoir - 93%



Wenatchee - Chelan River Basins



*Based on selected stations

Precipitation during February was 55% of average in the basin and 49% for the year-to-date. Runoff for Entiat River is forecast to be 57% of average for the summer. The April-September average forecast for Chelan River is 59%, Wenatchee River at Plain is 61% and Stehekin is 64%. Icicle, Stemilt and Squilchuck creeks are all expected to fall into the same forecast range. February average streamflows on the Chelan River were 33% and on the Wenatchee River 29%. March 1 average snowpack in Wenatchee Basin was 60%, in Chelan Basin was 54%; and Stemilt Creek was 68%. Snowpack in the Entiat River Basin was 61% of average. Reservoir storage in Lake Chelan was 367,700-acre feet, 219% of March 1 average and 54% of capacity. Lyman Lake SNOTEL had the most snow water with 26.2 inches of water. This site would normally have 48.4 inches on March 1. Temperatures were about 3 degrees below normal for February.

For more information contact your local Natural Resources Conservation Service office.

Wenatchee - Chelan River Basins

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	Chance Of Exceeding *						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
CHELAN RIVER near Chelan	APR-SEP	522	619	685	59	751	848	1160
	APR-JUL	478	560	615	60	670	752	1024
STEHEKIN near STEHEKIN	APR-SEP	416	481	525	64	569	634	827
	APR-JUL	369	420	455	65	490	541	701
ENTIAT RIVER near Ardenvoir	APR-SEP	98	116	129	57	142	160	227
	APR-JUL	90	107	118	57	129	146	206
WENATCHEE at Plain	APR-SEP	565	660	725	61	790	885	1190
	APR-JUL	538	611	660	62	709	782	1072
WENATCHEE R. at Peshastin	APR-SEP	511	762	932	57	1102	1353	1636
	APR-JUL	364	651	846	57	1041	1328	1485
STEMILT nr Wenatchee (miners in)	MAY-SEP	40	66	84	61	102	128	138
ICICLE CREEK near Leavenworth	APR-SEP	199	220	235	68	250	271	344
	APR-JUL	183	202	215	68	228	247	318
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	32988	38413	42100	60	45787	51212	70485
	APR-JUL	26006	31778	35700	60	39622	45394	59736

WENATCHEE - CHELAN RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
CHELAN LAKE	676.1	367.7	360.5	168.1

WENATCHEE - CHELAN RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
CHELAN LAKE BASIN	5	49	54
ENTIAT RIVER	1	63	61
WENATCHEE RIVER	11	60	60
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	2	79	68
COLOCKUM CREEK	1	59	67

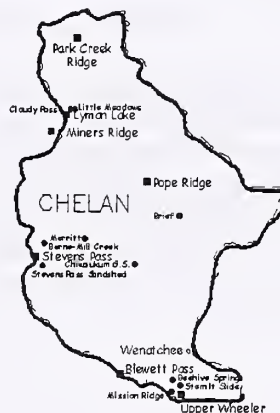
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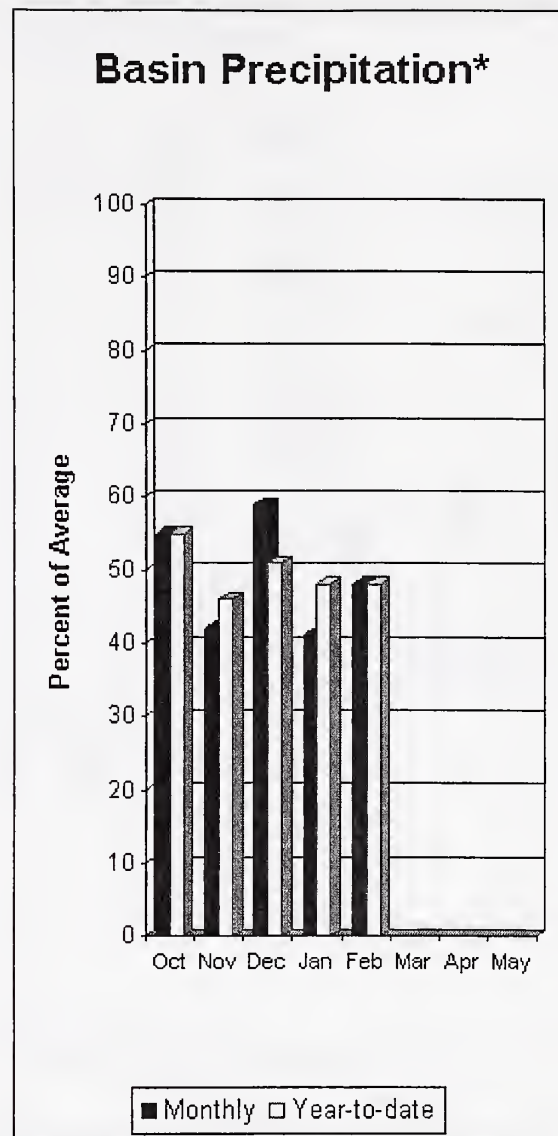
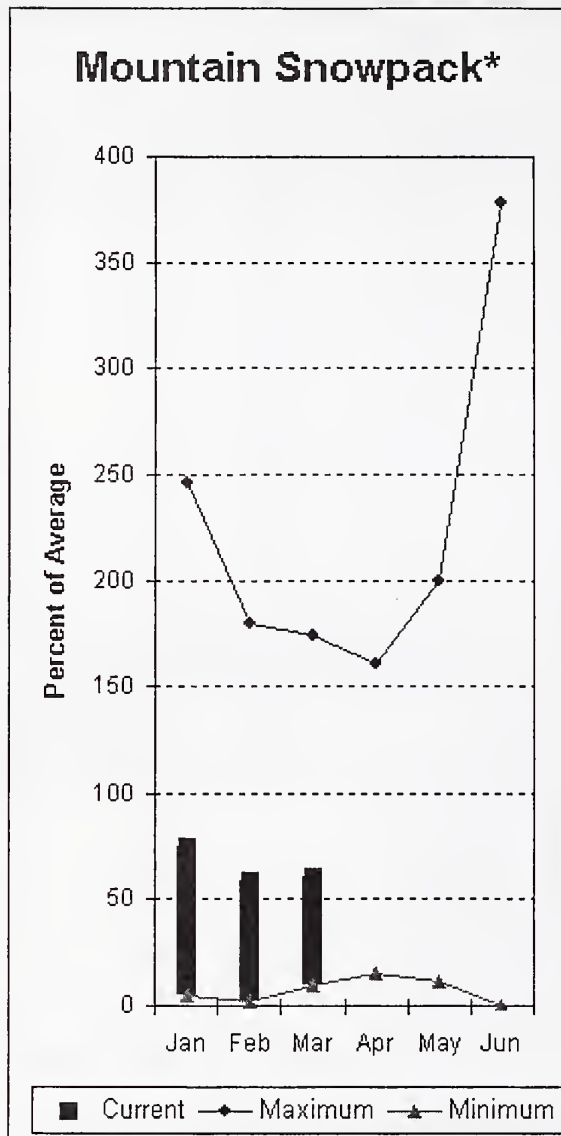
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Wenatchee-Chelan River Basins Percent of Average March 1, 2001

Snowpack - 62%
 Precipitation - 49%
 Reservoir - 219%



Upper Yakima River Basin



*Based on selected stations

March 1 reservoir storage for the Upper Yakima reservoirs was 231,000-acre feet, 76% of average. Forecasts for the Yakima River at Cle Elum are 63% of average. Lake inflows are all forecasted to be much below average this summer. February streamflows within the basin were Yakima near Cle Elum at 23% and Cle Elum River near Roslyn at 18%. March 1 snowpack was 61% based upon 10 snow courses and SNOTEL readings within the Upper Yakima Basin. Precipitation was 48% of average for February and 48% year-to-date for water. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Upper Yakima River Basin

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	-----		Chance Of Exceeding *		-----		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
KEECHELUS LAKE INFLOW	APR-JUL	63	75	83	67	91	103	124	
	APR-SEP	66	80	90	67	100	114	135	
KACHESS LAKE INFLOW	APR-JUL	50	61	69	62	77	88	111	
	APR-SEP	53	65	73	62	81	93	118	
CLE ELUM LAKE INFLOW	APR-JUL	220	244	260	64	276	300	409	
	APR-SEP	229	259	280	63	301	331	448	
YAKIMA at Cle Elum	APR-JUL	434	488	525	63	562	616	832	
	APR-SEP	477	538	580	63	622	683	915	
TEANAWAY near Cle Elum	APR-JUL	69	78	85	60	92	101	141	
	APR-SEP	71	80	87	60	94	103	145	

UPPER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
KEECHELUS	157.8	23.5	72.6	105.0
KACHESS	239.0	120.5	194.3	179.0
CLE ELUM	436.9	87.0	296.8	273.0

UPPER YAKIMA RIVER BASIN Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
UPPER YAKIMA RIVER	10	58	61

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

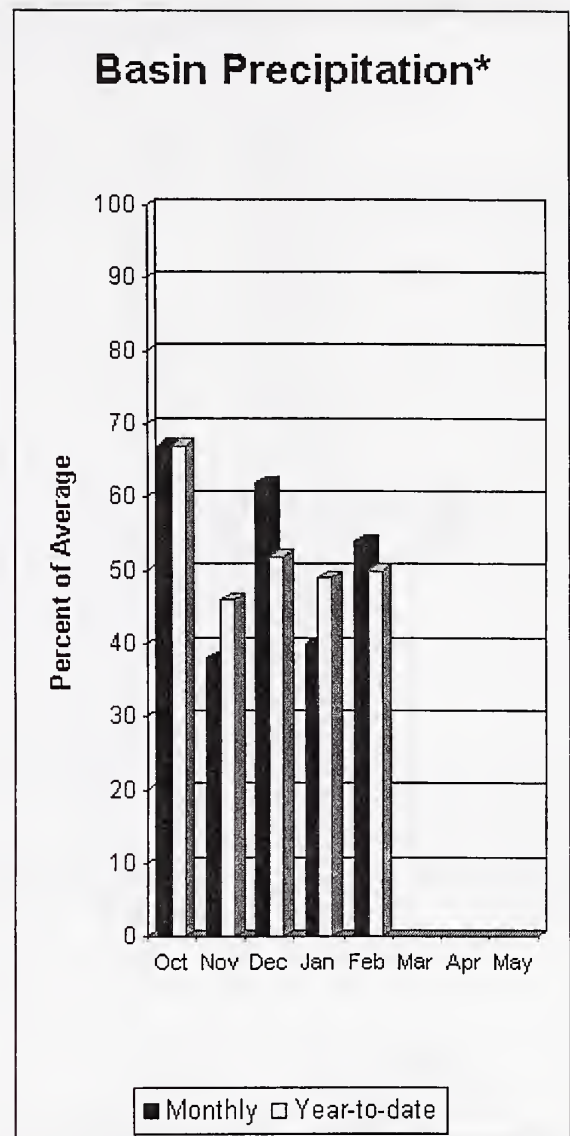
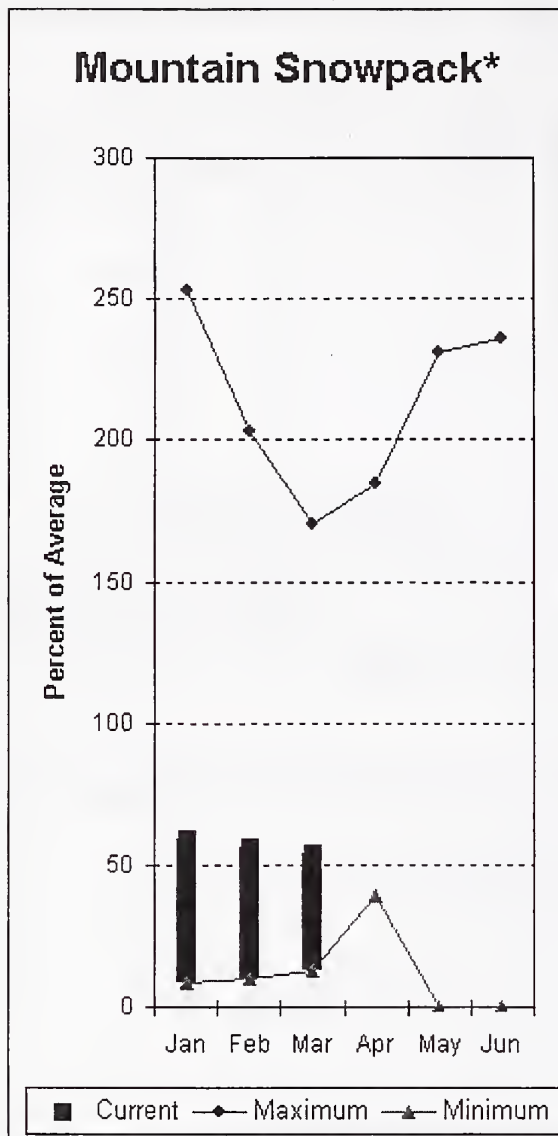
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 (2) - The value is natural flow - actual flow may be affected by upstream water management.



Upper Yakima River Basin Percent of Average March 1, 2001

Snowpack - 61%
 Precipitation - 48%
 Reservoir - 41%

Lower Yakima River Basin



*Based on selected stations

February average streamflows within the basin were: Yakima River near Parker, 22%; Naches River near Naches, 24%; and Yakima River at Kiona, 38%. March 1 reservoir storage for Bumping and Rimrock reservoirs was 106,600-acre feet, 76% of average. Forecast averages for Yakima River near Parker are 57%; American River near Nile, 64%; Ahtanum Creek, 54%; and Klickitat River near Glenwood, 69%. March 1 snowpack was 61% based upon 9 snow courses and SNOTEL readings within the Lower Yakima Basin. Precipitation was 54% of average for February and 50% year-to-date for water. Temperatures were 3 degrees below normal for the month and 2 degrees below average for the water year. Volume forecasts for Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available, which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Lower Yakima River Basin

Streamflow Forecasts - March 1, 2001

Forecast Point	Forecast Period	<----- Drier ----- Future Conditions ----- Wetter ----->						30-Yr Avg. (1000AF)
		Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *		
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
BUMPING LAKE INFLOW	APR-SEP	61	75	84	62	93	107	136
	APR-JUL	57	70	78	63	86	99	124
AMERICAN RIVER near Nile	APR-SEP	60	70	76	64	82	92	118
	APR-JUL	56	65	71	65	77	86	109
RIMROCK LAKE INFLOW	APR-SEP	107	128	143	60	158	179	238
	APR-JUL	95	111	122	61	133	149	200
NACHES near Naches	APR-SEP	354	426	475	57	524	596	832
	APR-JUL	330	394	438	58	482	546	755
AHTANUM CREEK nr Tampico (2)	APR-SEP	7.3	17.8	25	54	32	43	46
	APR-JUL	6.8	16.4	23	55	30	39	42
YAKIMA near Parker	APR-SEP	864	1023	1130	57	1237	1396	1994
	APR-JUL	816	954	1047	58	1140	1278	1805
KLICKITAT near Glenwood	APR-JUN	55	68	76	69	84	97	110
	APR-SEP	68	85	97	69	109	126	140

LOWER YAKIMA RIVER BASIN Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg
BUMPING LAKE	33.7	3.0	14.0	10.0
RIMROCK	198.0	103.6	139.9	130.0

LOWER YAKIMA RIVER BASIN Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

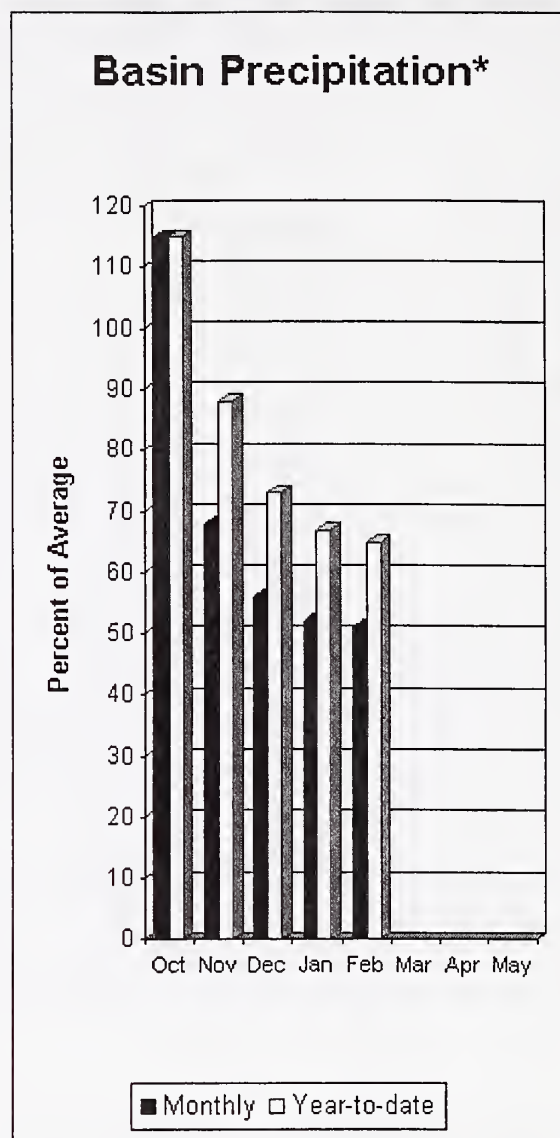
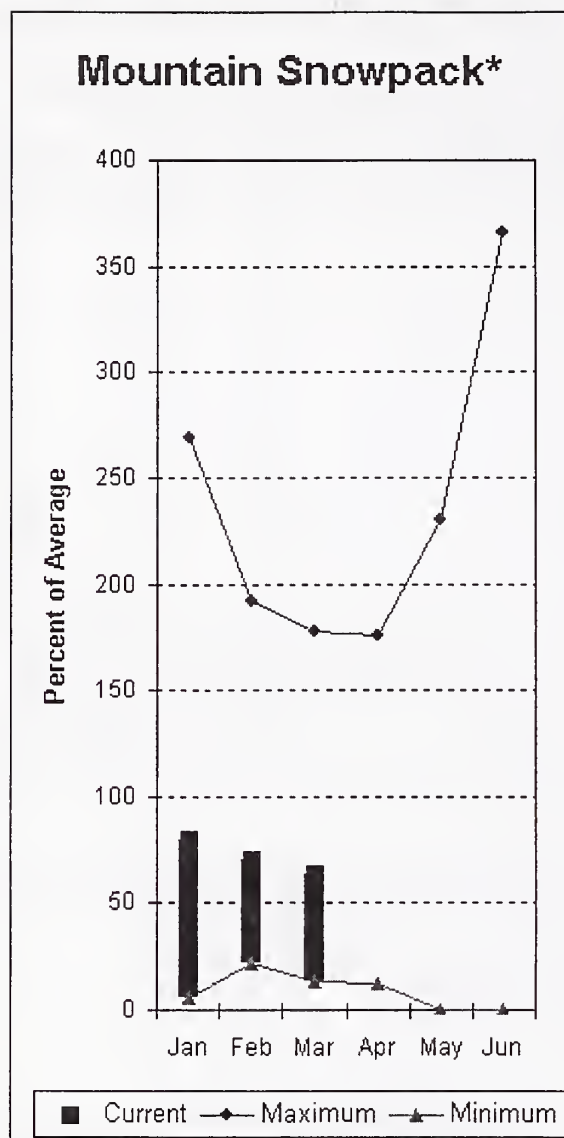
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Lower Yakima River Basin
Percent of Average
March 1, 2001

Snowpack - 61%
Precipitation - 50%
Reservoir - 76%

Walla Walla River Basin



*Based on selected stations

February precipitation was 51% of average, dropping the year-to-date precipitation to 65% of average. March 1 average snowpack was at 64%. The forecast for the coming summer is for 79% of average streamflow in the South Fork Walla Walla River and 81% for Mill Creek. February streamflow was 57% of average for the Walla Walla River. The Touchet SNOTEL site had 17.2 inches of snow-water-equivalent. The average March 1 reading for this site is 27.8 inches. Average temperatures were 5 degrees below normal for February and have averaged 2-3 degrees below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Walla Walla River Basin

Streamflow Forecasts - March 1, 2001

		<----- Drier ----- Future Conditions ----- Wetter ----->						
Forecast Point	Forecast Period	Chance Of Exceeding *		Chance Of Exceeding *		Chance Of Exceeding *		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
MILL CREEK at Walla Walla	APR-SEP	6.5	10.9	13.9	81	16.9	21	17.1
	APR-JUL	6.3	10.7	13.7	81	16.7	21	16.9
SF WALLA WALLA near Milton-Freewater	APR-JUL	33	38	43	80	47	53	53
	APR-SEP	41	47	52	79	57	63	66

WALLA WALLA RIVER BASIN Reservoir Storage (1000 AF) - End of February					WALLA WALLA RIVER BASIN Watershed Snowpack Analysis - March 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					WALLA WALLA RIVER	2	59	64

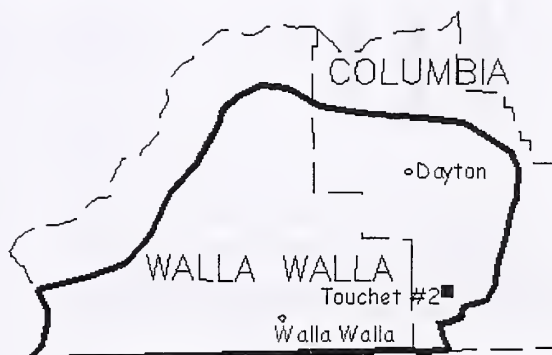
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
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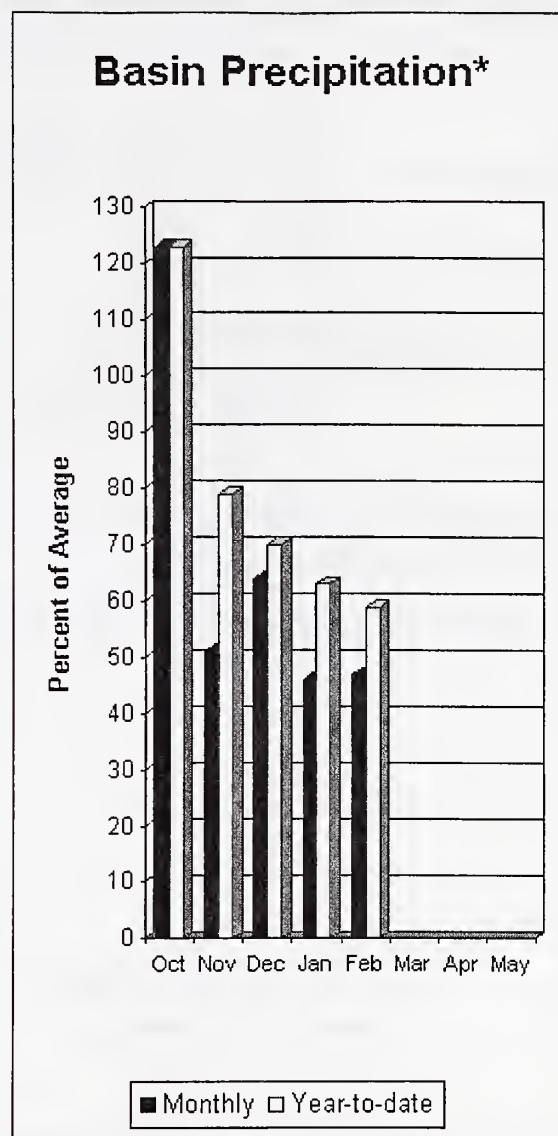
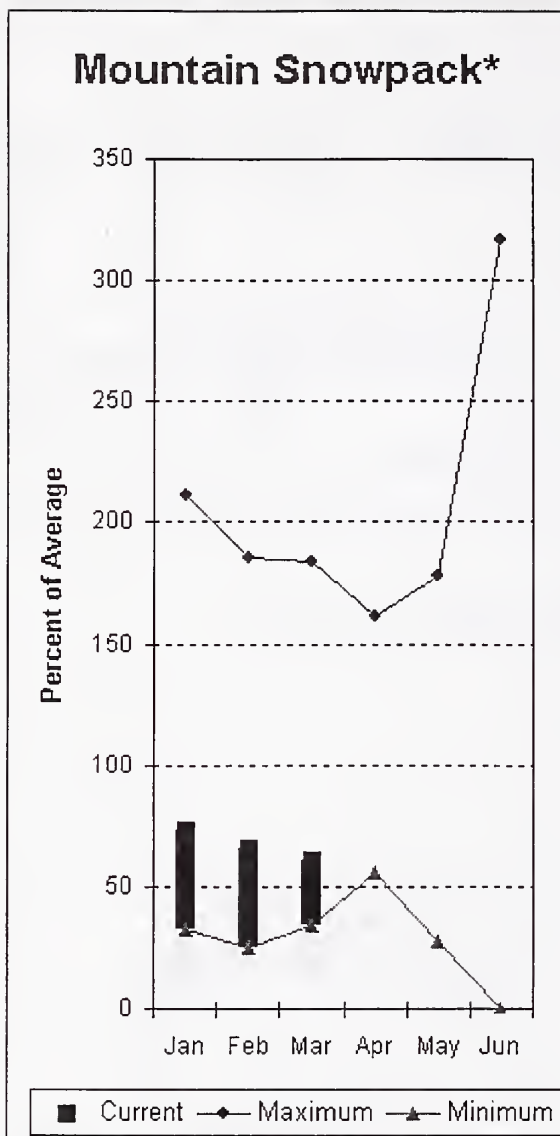
Walla Walla River Basin
 Percent of Average
 March 1, 2001

Snowpack - 64%
 Precipitation - 65%



High Ridge ■

Lower Snake River Basin



*Based on selected stations

The April - September forecast is for 57% of average streamflow in the Snake River below Lower Granite Dam, 65% for Grande Ronde at Troy, and 63% for Clearwater River at Spalding. February precipitation was 47% of average, bringing the year-to-date precipitation to 59% of average. March 1 snowpack was at 61% of average. February streamflow was 44% of average for Snake River below Lower Granite Dam and 29% for Grande Ronde River near Troy. Average temperatures 3 degrees below normal for February and remained 2 degrees below normal for the water year.

For more information contact your local Natural Resources Conservation Service office.

Lower Snake River Basin

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
GRANDE RONDE at Troy (1)	MAR-JUL	515	818	955	65	1092	1395	1471
	APR-SEP	456	730	855	65	980	1254	1312
CLEARWATER at Spalding (1,2)	APR-JUL	3172	4305	4820	63	5335	6468	7618
	APR-SEP	3350	4540	5080	63	5620	6810	8051
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	5030	10029	12300	57	14571	19570	21650
	APR-SEP	5631	11249	13800	57	16351	21969	24360

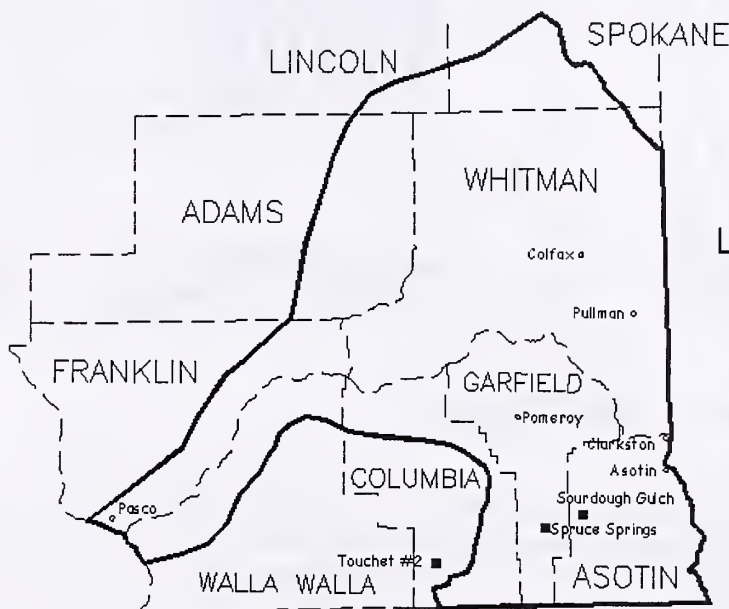
LOWER SNAKE RIVER BASIN Reservoir Storage (1000 AF) - End of February					LOWER SNAKE RIVER BASIN Watershed Snowpack Analysis - March 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					LOWER SNAKE, GRANDE RONDE	16	54	61

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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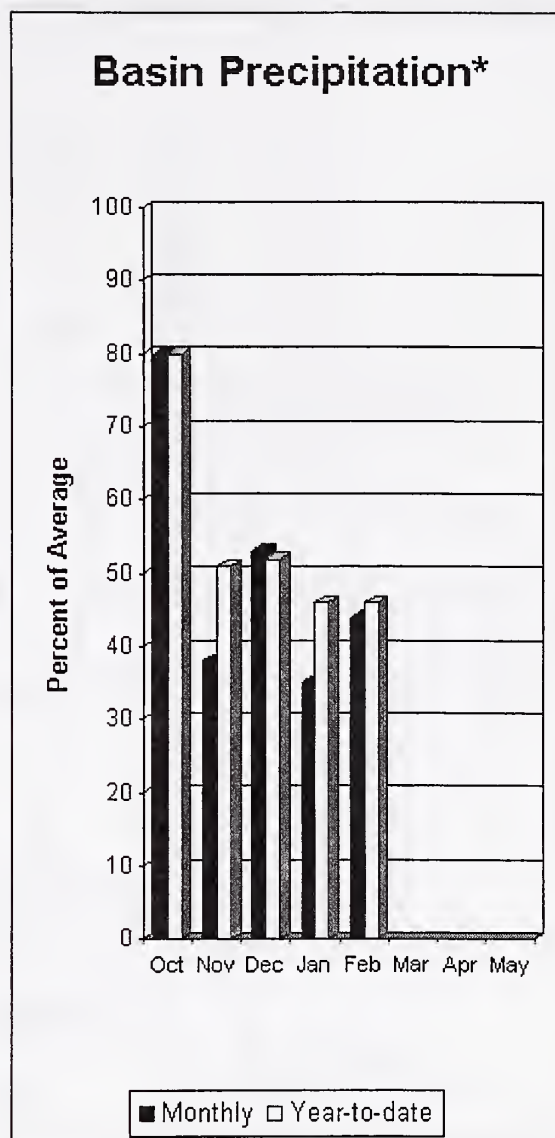
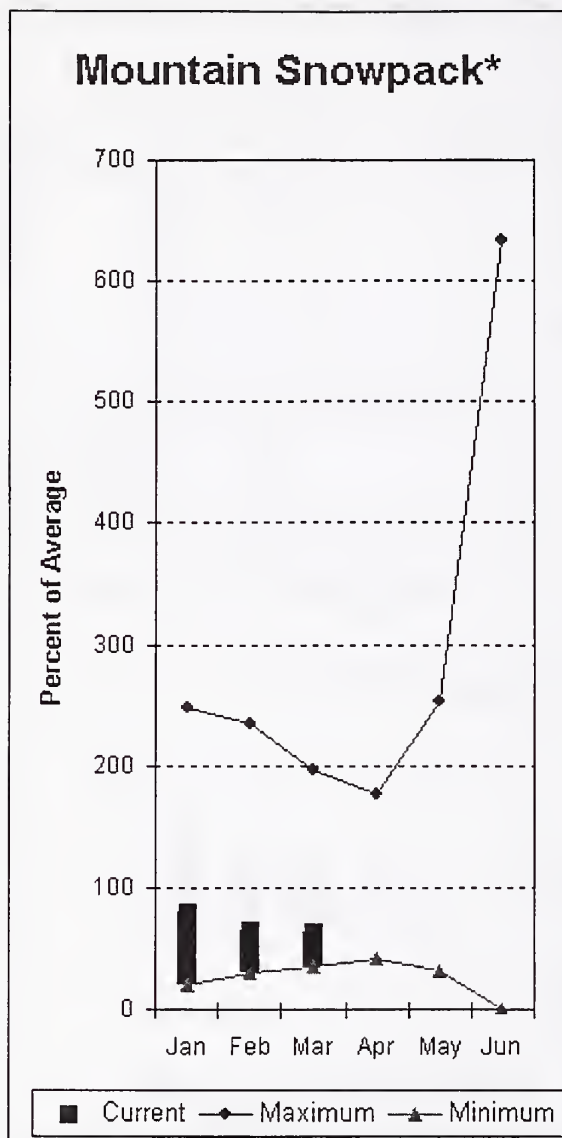
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Lower Snake River Basin
Percent of Average
March 1, 2001

Snowpack - 61%
Precipitation - 59%

Cowlitz - Lewis River Basins



*Based on selected stations

Forecasts for April – September streamflows within the basin are Lewis at Ariel; 65%, Cowlitz at Castle Rock; 63% and the Columbia at The Dalles; 56% of average. February average streamflow for Cowlitz River was 41% and 42% for Lewis River. February precipitation was 44% of average and the water-year average was 46%. March 1 snow cover for Cowlitz River was 54%, and Lewis River was 71% of average. Cayuse Pass snow course reported the most water content for the basin with 38 inches. Average March 1 water content is 65.3 inches. Average temperatures were 4 degrees below normal during February and have remained near average throughout the water year.

For more information contact your local Natural Resources Conservation Service office.

Cowlitz - Lewis River Basins

Streamflow Forecasts - March 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>>						30-Yr Avg. (1000AF)
		Chance Of Exceeding *						
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
LEWIS at Ariel (2)	APR-JUL	401	570	685	65	800	969	1053
	APR-SEP	489	662	780	65	898	1071	1206
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	200	772	1160	59	1548	2120	1970
	APR-JUL	64	633	1020	59	1407	1976	1731
COWLITZ R. at Castle Rock (2)	APR-SEP	322	1125	1670	63	2215	3018	2667
	APR-JUL	646	1131	1460	63	1789	2274	2325
KLICKITAT near Glenwood	APR-JUN	55	68	76	69	84	97	110
	APR-SEP	68	85	97	69	109	126	140
COLUMBIA R. at The Dalles (2)	APR-SEP	41838	49913	55400	56	60887	68962	98982
	APR-JUL	31941	41205	47500	56	53795	63059	84760

COWLITZ - LEWIS RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

COWLITZ - LEWIS RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
LEWIS RIVER	4	45	71
COWLITZ RIVER	7	47	54

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

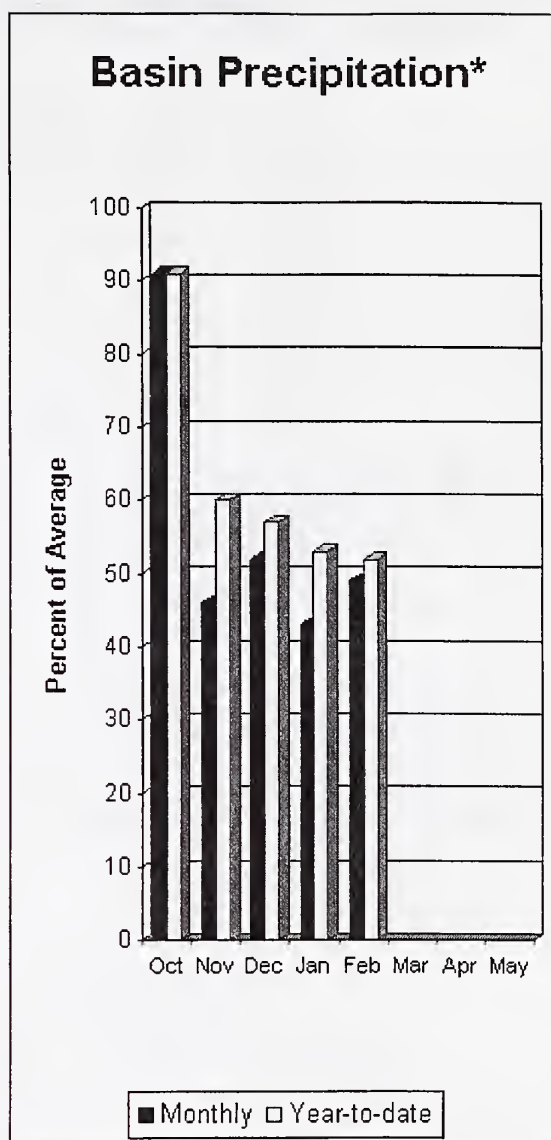
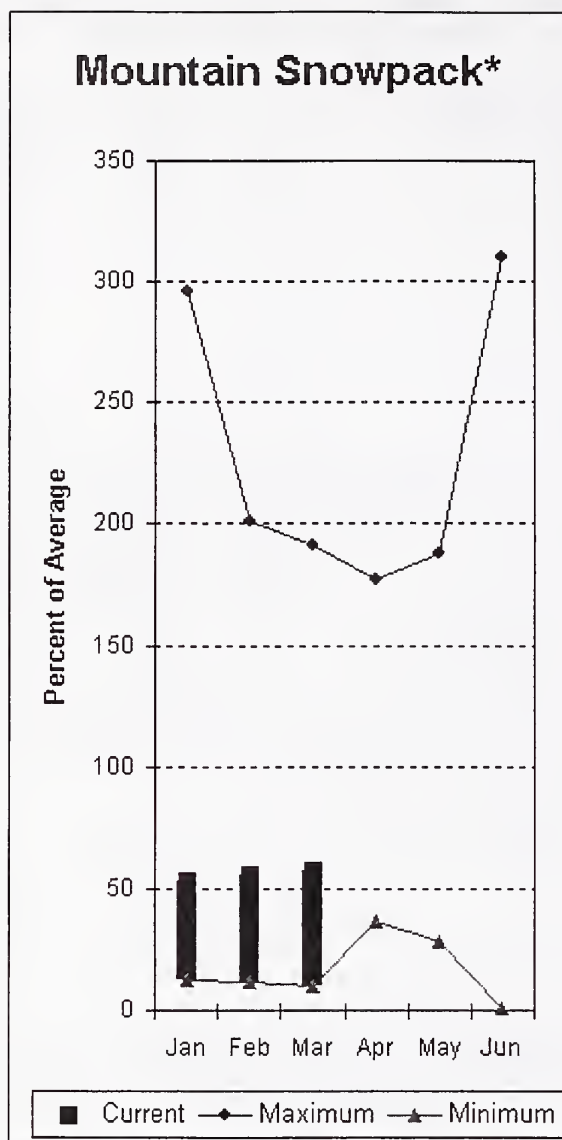
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Cowlitz-Lewis River Basins
Percent of Average
March 1, 2001

Snowpack - 63%
Precipitation - 46%

White - Green River Basins



*Based on selected stations

Summer runoff is forecast to be 66% of normal for the Green River below Howard Hanson Dam and 70% for the White River near Buckley. March 1 snowpack was 59% of average in both White River and Puyallup river basins and 52% in Green River Basin. Water content on March 1 at Corral Pass SNOTEL, at an elevation of 6,000 feet, was 15.5 inches. This site has a March 1 average of 27.6 inches. February precipitation was 49% of average, bringing the water year-to-date to 52% of average for the basins. Average temperatures in the area were 3 degrees below normal.

For more information contact your local Natural Resources Conservation Service office.

White - Green - Puyallup River Basins

Streamflow Forecasts - March 1, 2001

		<<----- Drier ----- Future Conditions ----- Wetter ----->>						
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	
WHITE near Buckley (1,2)	APR-JUL	225	288	317	71	346	409	447
	APR-SEP	269	345	379	70	413	489	542
GREEN below Howard Hanson (1,2)	APR-JUL	96	147	170	66	193	244	257
	APR-SEP	109	163	188	66	213	267	285

WHITE - GREEN - PUYALLUP RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

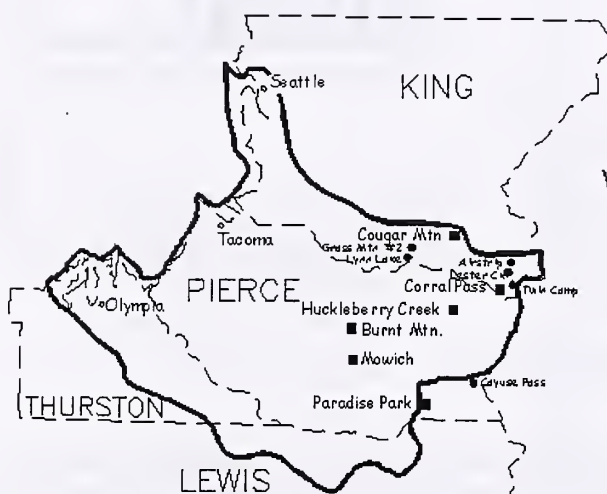
WHITE - GREEN - PUYALLUP RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
WHITE RIVER	3	55	59
GREEN RIVER	5	52	52
PUYALLUP RIVER	3	54	59

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

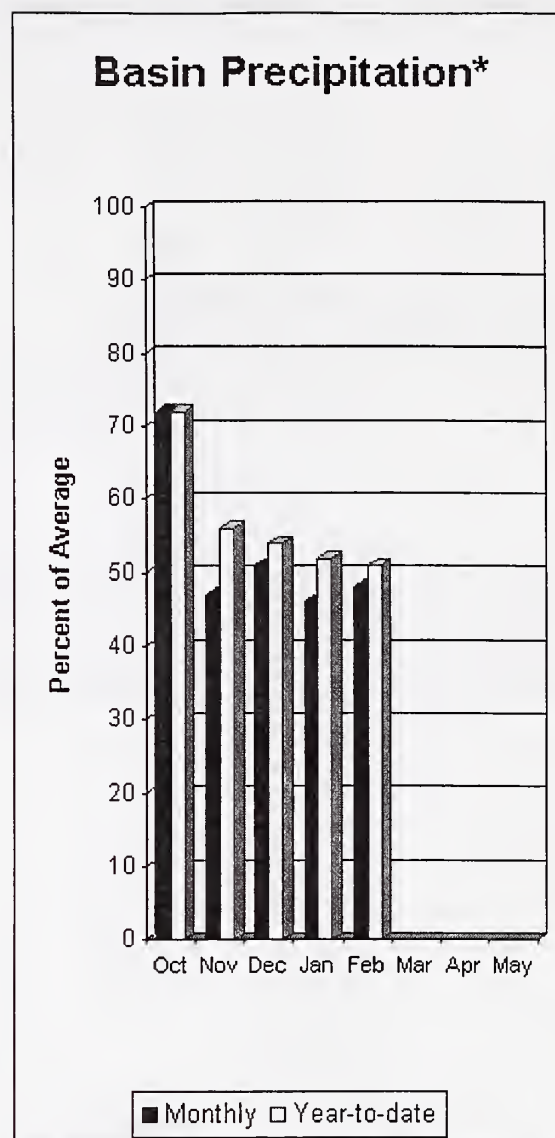
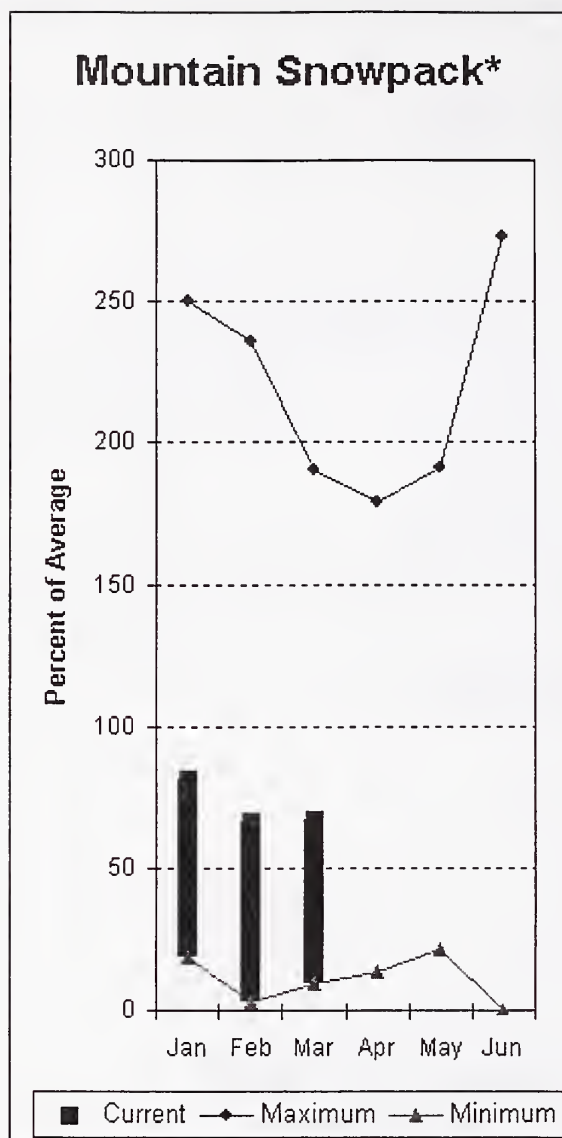
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White-Green-Puyallup Basins
Percent of Average
March 1, 2001

Snowpack - 57%
Precipitation - 52%

Central Puget Sound River Basins



*Based on selected stations

Forecast for spring and summer flows are: 70% for Cedar River near Cedar Falls; 69% for Rex River; 72% for South Fork of the Tolt River; and 68% for Cedar River at Cedar Falls. Basin-wide precipitation for February was 48% of average, bringing water-year-to-date to 51% of average. March 1 average snow cover in Cedar River Basin was 84%, Tolt River Basin was 64%, Snoqualmie River Basin was 61%, and Skykomish River Basin was 60%. Stevens Pass SNOTEL, at 4,070 feet, had 19.1 inches of water content. Average March 1 water content is 34.7 inches. February temperatures were 3 degrees below normal for the past month. Stampede Pass and Olallie Meadows SNOTEL sites both recorded the lowest amount of snow water ever measured, by electronic instruments, at those locations.

For more information contact your local Natural Resources Conservation Service office.

Central Puget Sound River Basins

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>							
Forecast Point	Forecast Period	=====		Chance Of Exceeding *		=====		30-Yr Avg. (1000AF)	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)		
CEDAR near Cedar Falls	APR-JUL	36	47	54	70	61	71	77	
	APR-SEP	40	51	59	70	67	78	84	
REX near Cedar Falls	APR-JUL	10.7	15.5	18.8	69	22	27	27	
	APR-SEP	12.2	17.4	21	69	25	30	30	
CEDAR RIVER at Cedar Falls	APR-JUL	33	46	55	67	64	77	82	
	APR-SEP	34	47	56	68	65	78	83	
SOUTH FORK TOLT near Index	APR-JUL	8.3	9.9	10.9	72	11.9	13.5	15.2	
	APR-SEP	9.5	11.5	12.8	72	14.1	16.1	17.8	

CENTRAL PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February

Reservoir	Usable Capacity	*** Usable Storage ***		
		This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 2001

Watershed	Number of Data Sites	This Year as % of	
		Last Yr	Average
CEDAR RIVER	6	66	84
TOLT RIVER	3	42	64
SNOQUALMIE RIVER	6	49	61
SKYKOMISH RIVER	4	49	60

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

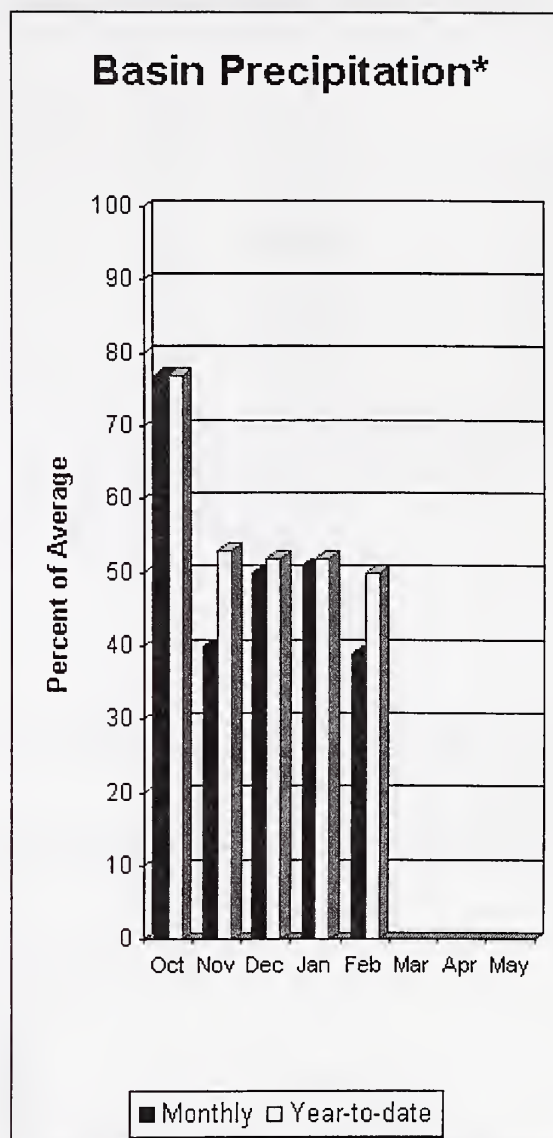
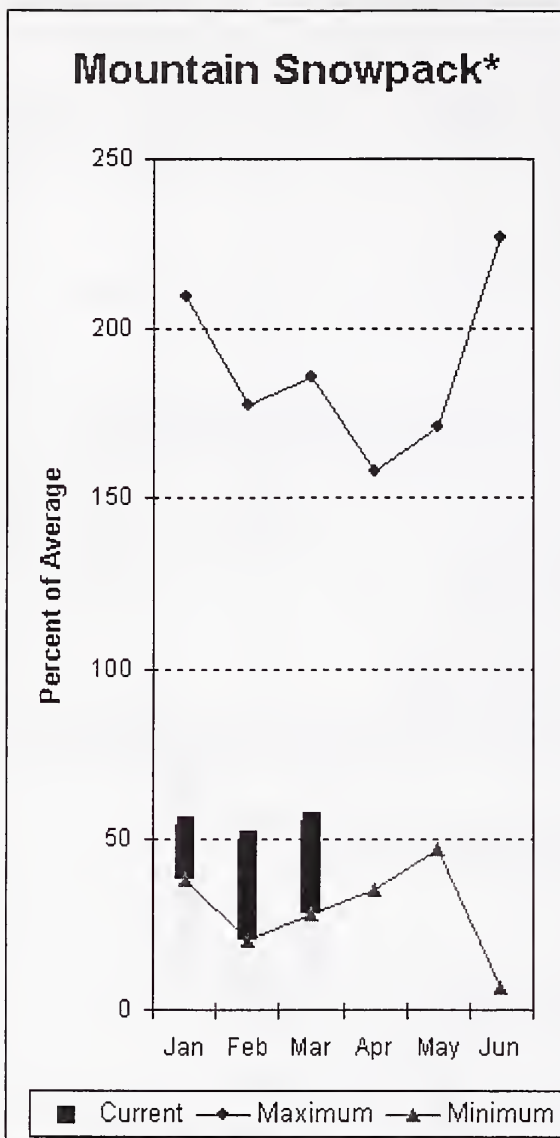
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Central Puget Sound Basins Percent of Average March 1, 2001

Snowpack - 67%
Precipitation - 51%



North Puget Sound River Basins



*Based on selected stations

Forecast for Skagit River streamflow is 66% of average for the spring and summer period. February streamflow in Skagit River was 46% of average. Other forecast points included Baker River at 67% and Thunder Creek at 69% of average. Basin-wide precipitation for February was 39% of average, bringing water-year-to-date to 50% of average. March 1 average snow cover in Skagit River Basin was 52%, Baker River Basin was 47% and Nooksack River Basin was 55%. Rainy Pass SNOTEL, at 4,780 feet, had 18 inches of water content. Average March 1 water content was 32.7 inches. March 1 Skagit River reservoir storage was 257% of average and 56% of capacity. Average February temperatures were 4 degrees below normal for the basin but remain near average for the water year. All three long-term SNOTEL sites in the basin recorded new record low snowpack. Beating the, most recent, previous record low years of 1993 and 1994 at Rainy Pass, Harts Pass and Thunder Basin SNOTEL sites.

For more information contact your local Natural Resources Conservation Service office.

North Puget Sound River Basins

Streamflow Forecasts - March 1, 2001

Forecast Point	Forecast Period	<<===== Drier ===== Future Conditions ===== Wetter =====>				30-Yr Avg. (1000AF)		
		=====		Chance Of Exceeding *			=====	
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)		30% (1000AF)	10% (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	133	148	159	69	170	185	230
	APR-SEP	196	214	226	69	238	256	328
SKAGIT at Newhalem (2)	APR-JUL	1025	1153	1240	66	1327	1455	1879
	APR-SEP	1209	1350	1445	66	1540	1681	2191
BAKER RIVER near Concrete	APR-JUL	443	517	568	68	619	693	836
	APR-SEP	563	650	710	67	770	857	1064

NORTH PUGET SOUND RIVER BASINS Reservoir Storage (1000 AF) - End of February					NORTH PUGET SOUND RIVER BASINS Watershed Snowpack Analysis - March 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
ROSS	1404.1	789.7	791.2	307.6	SKAGIT RIVER	13	49	52
DIABLO RESERVOIR	90.6	88.2	86.9	---	BAKER RIVER	5	49	47
GORGE RESERVOIR		NO REPORT			NOOKSACK RIVER	2	49	55

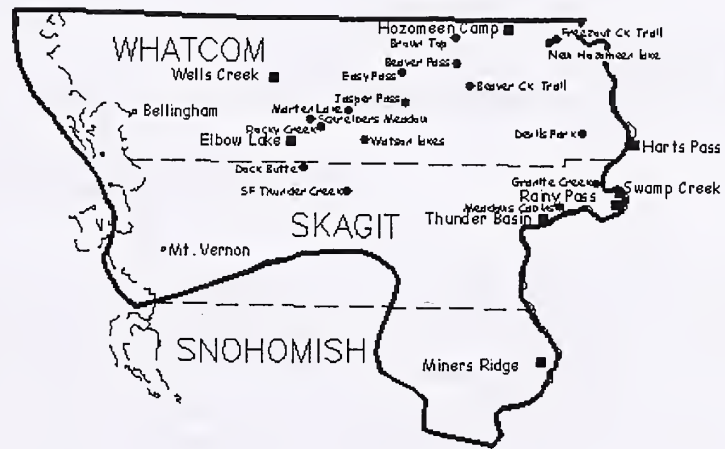
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

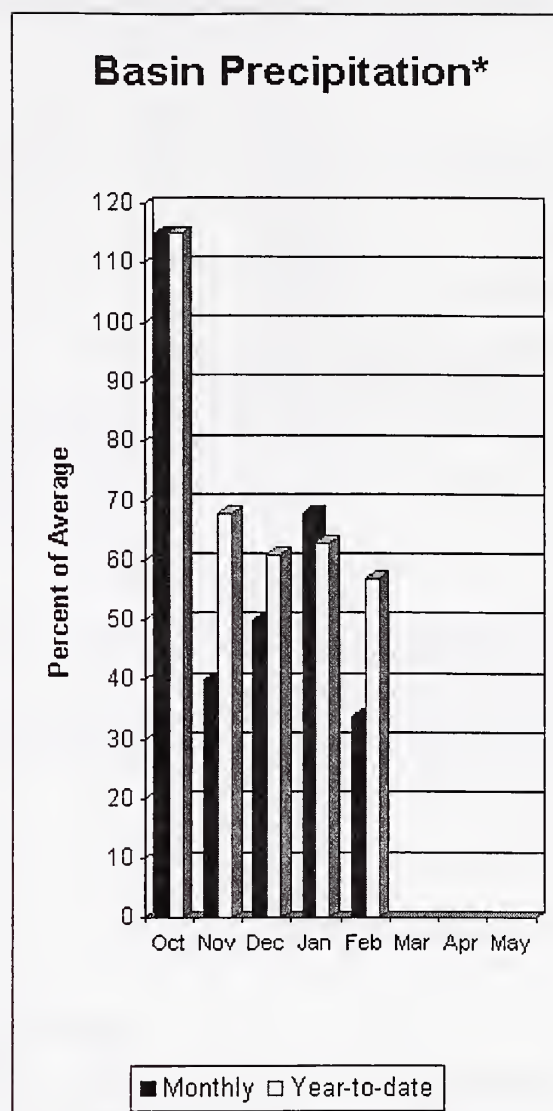
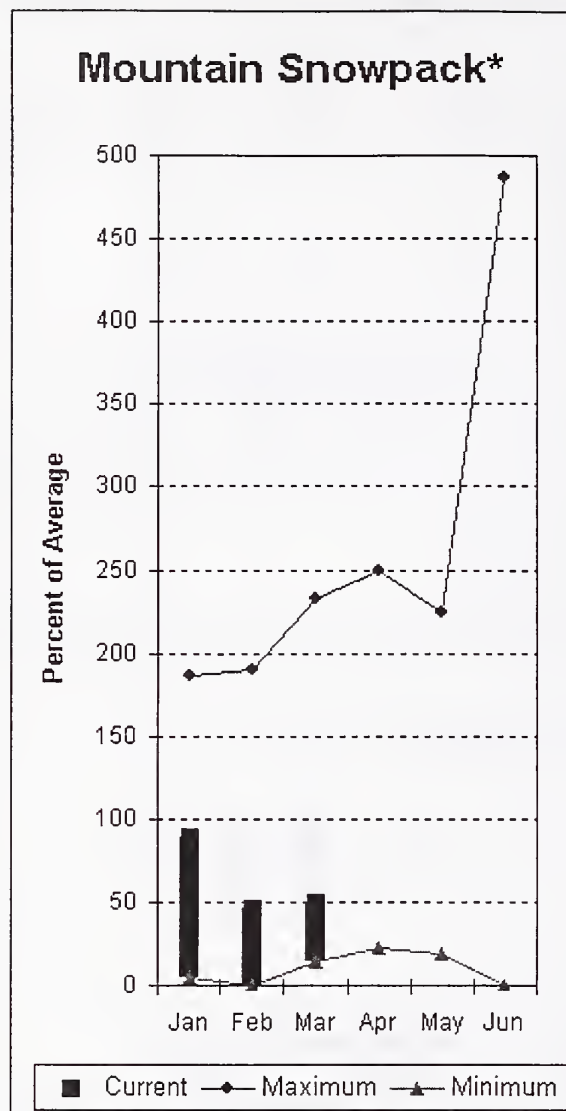
- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

North Puget Sound Basins
 Percent of Average
 March 1, 2001

Snowpack - 55%
 Precipitation - 50%
 Reservoir - 257%



Olympic Peninsula River Basins



*Based on selected stations

Forecasted average runoff for streamflow in Dungeness River Basin is 69% and 69% for Elwha River. Big Quilcene and Wynoochee rivers should expect below average runoff this summer also. February precipitation was 34% of average. Precipitation has accumulated at 57% of average for the water year. February precipitation at Quillayute was 3.48 inches. The thirty-year average for February is 12.01 inches. March 1 snow cover in the Elwah River Basin was at 29% of average, Morse Creek Basin was 50%, Dungeness River Basin was 49% and Quilcene River Basin was 66%. The Mount Crag SNOTEL near Quilcene had 17.6 inches of snow-water-equivalent on March 1. Average for this site is 26.5 inches. Hurricane Ridge snow course measurements report only 5.1 inches of snow water. Normally Hurricane Ridge would have 13.7 inches. Temperatures were 1 degree above average for the month and near average for the water year.

For more information contact your local Natural Resources Conservation Service office.

Olympic Peninsula River Basins

Streamflow Forecasts - March 1, 2001

		<<===== Drier ===== Future Conditions ===== Wetter =====>>						
Forecast Point	Forecast Period	===== Chance Of Exceeding * =====						30-Yr Avg. (1000AF)
		90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF) (% AVG.)		30% (1000AF)	10% (1000AF)	
=====								
DUNGENESS near Sequim	APR-SEP	89	99	106	69	113	123	153
	APR-JUL	74	82	87	70	92	100	125
ELWHA near Port Angeles	APR-SEP	281	323	352	69	381	423	510
	APR-JUL	243	275	297	70	319	351	424

OLYMPIC PENINSULA RIVER BASINS Reservoir Storage (1000 AF) - End of February					OLYMPIC PENINSULA RIVER BASINS Watershed Snowpack Analysis - March 1, 2001			
Reservoir	Usable Capacity	*** Usable Storage ***			Watershed	Number of Data Sites	This Year as % of	
		This Year	Last Year	Avg			Last Yr	Average
					OLYMPIC PENINSULA	4	48	50
					ELWHA RIVER	1	32	29
					MORSE CREEK	1	46	50
					DUNGENESS RIVER	1	52	49
					QUILCENE RIVER	1	56	66
					WYNOOCHEE RIVER	0	0	0

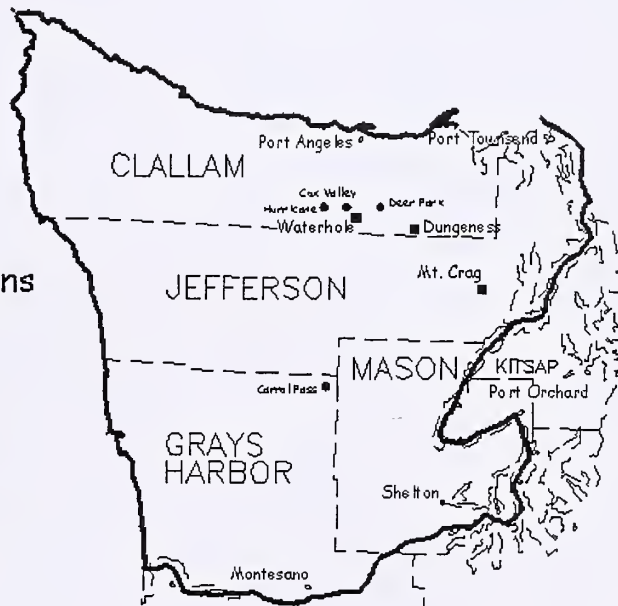
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The average is computed for the 1961-1990 base period.

- (1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
 (2) - The value is natural flow - actual flow may be affected by upstream water management.

Olympic Peninsula River Basins
Percent of Average
March 1, 2001

Snowpack - 50%
Precipitation - 57%



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The Following Organizations Cooperate with the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of the Environment Investigations Branch, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation Whatcom County Pierce County
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association Whitestone Reclamation District

*Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.



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